Dissertation on

A STUDY ON DIFFERENT TYPES OF ECTROPION AND ITS SURGICAL OUTCOME

Submitted in partial fulfillment of requirements of

M.S.OPHTHALMOLOGY

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MADRAS MEDICAL COLLEGE

CHENNAI – 600 003

THE TAMILNADU DR.M.G.R. MEDICAL UNIVERSITY

CHENNAI – 600003

APRIL 2016

CERTIFICATE

This is to certify that this dissertation entitled **"A STUDY ON DIFFERENT TYPES OF ECTROPION AND ITS SURGICAL OUTCOME"** is a bonafide record of the research work done by **Dr. J. RAMAPRIYADHARSHINI**, post graduate in Regional Institute of Ophthalmology, Government Ophthalmic Hospital, Madras Medical College and Research Institute, Chennai-03 in partial fulfillment of the regulations laid down by the The Tamilnadu Dr.M.G.R. Medical University for the award of M.S.Ophthalmology Branch III, under my guidance and supervision during the academic years 2013-2016.

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Finally I am indebted to all the patients for their sincere cooperation for the completion of this study.

INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE, CHENNAI-3

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CERTIFICATE OF APPROVAL

To
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Dear Dr.J.Ramapriyadharshini,

The Institutional Ethics Committee has considered your request and approved your study titled **"A Study on different types of ectropion and its surgical outcome" No.05062015.**

The following members of Ethics Committee were present in the meeting held on 09.06.2015 conducted at Madras Medical College, Chennai-3.

1.	Prof.C.Rajendran, M.D.,	: Chairperson
2.	Prof.R.Vimala, M.D., Dean, MMC, Ch-3	: Deputy Chairperson
3.	Prof.B.Kalaiselvi, M.D., Vice-Principal, MMC, Ch-3	: Member Secretary
4.	Prof.B.Vasanthi, M.D., Prof. of Pharmacology, MMC	: Member
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11.	Thiru S.Rameshkumar, B.Com., MBA	: Lay Person
12.	Thiru S.Govindasamy, B.A., B.L.,	: Lawyer
13.	Tmt.Arnold Saulina, M.A., MSW.,	: Social Scientist

We approve the proposal to be conducted in its presented form.

The Institutional Ethics Committee expects to be informed about the progress of the study and SAE occurring in the course of the study, any changes in the protocol and patients information/informed consent and asks to be provided a copy of the final report.

10/6/15

Member Secretary, Ethics Committee

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MADRAS MEDICAL COLLEGE
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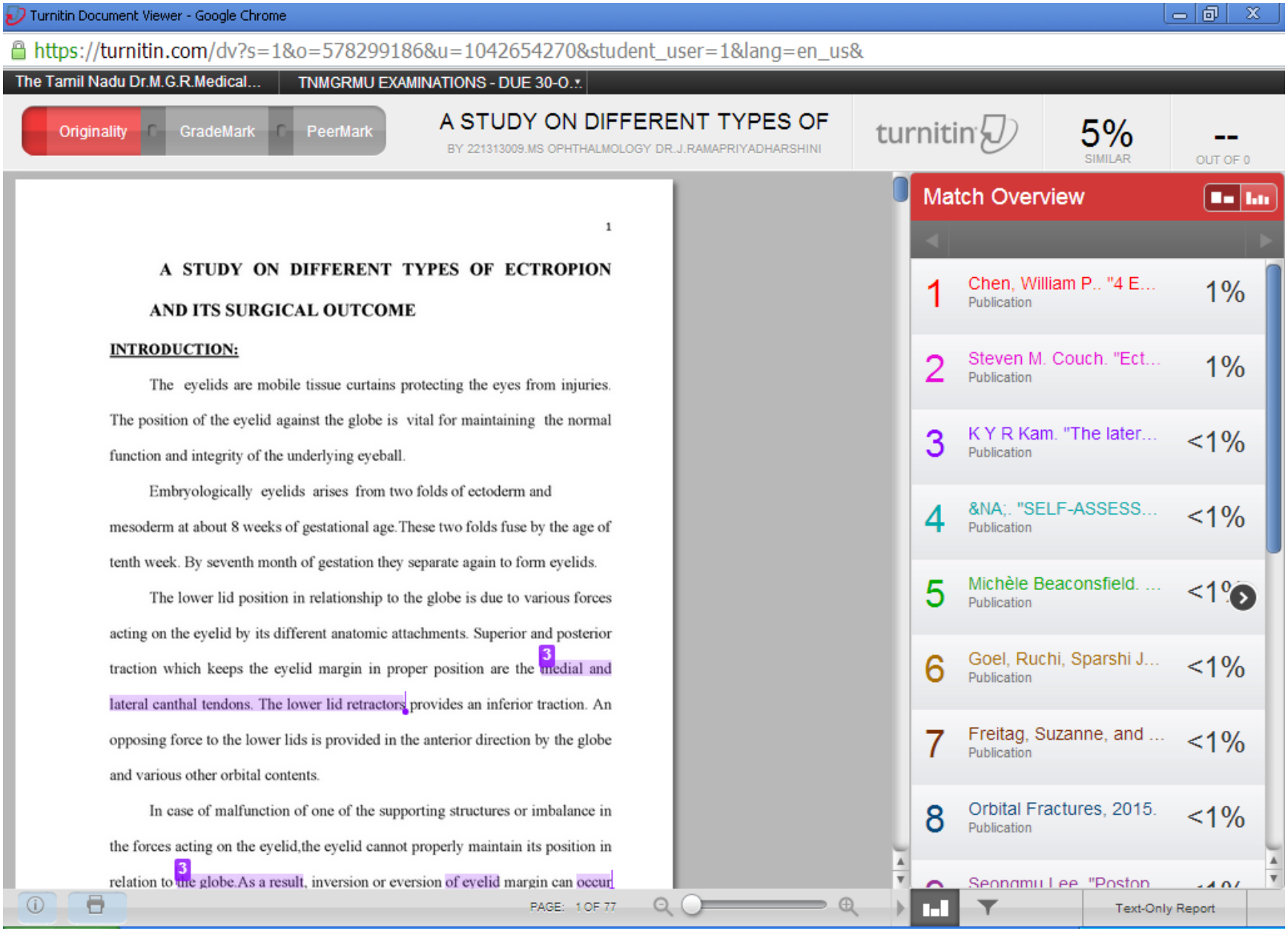
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A STUDY ON DIFFERENT TYPES OF ECTROPION AND ITS SURGICAL OUTCOME
INTRODUCTION:
The eyelids are mobile tissue curtains protecting the eyes from injuries. The position of the eyelid against the globe is vital for maintaining the normal function and integrity of the underlying eyeball.
Embryologically eyelids arises from two folds of ectoderm and mesoderm at about 8 weeks of gestational age.These two folds fuse by the age of tenth week. By seventh month of gestation they separate again to form eyelids.
The lower lid position in relationship to the globe is due to various forces acting on the eyelid by its different anatomic attachments. Superior and posterior traction which keeps the eyelid margin in proper position are the medial and lateral canthal tendons. The lower lid retractors provides an inferior traction. An opposing force to the lower lids is provided in the anterior direction by the globe and various other orbital contents.
In case of malfunction of one of the supporting structures or imbalance in the forces acting on the eyelid,the eyelid cannot properly maintain its position in relation to the globe.As a result, inversion or eversion of eyelid margin can occur
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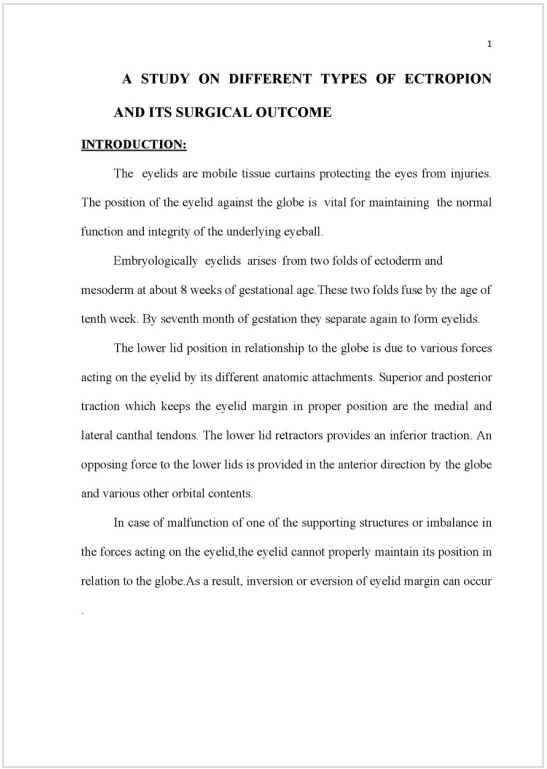

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A STUDY ON DIFFERENT TYPES OF ECTROPION AND ITS SURGICAL OUTCOME

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In case of malfunction of one of the supporting structures or imbalance in the forces acting on the eyelid,the eyelid cannot properly maintain its position in relation to the globe.As a result, inversion or eversion of eyelid margin can occur

DECLARATION BY THE CANDIDATE

I hereby declare that this dissertation entitled "**A STUDY ON DIFFERENT TYPES OF ECTROPION AND ITS SURGICAL OUTCOME**" is a bonafide and genuine research work carried out by me under the guidance of my professors and assistant professors.

Date :

Place : Dr.J.Ramapriyadharshini

CONTENTS

PART I

A STUDY ON DIFFERENT TYPES OF ECTROPION AND ITS SURGICAL OUTCOME

INTRODUCTION:

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HISTORY AND REVIEW OF LITERATURE.

EVOLUTION IN THE SURGICAL MANAGEMENT OF ECTROPION

1812 - Full thickness midline wedge resection of the eyelid using sutures to correct involutional ectropion was introduced by sir William adams

1831 – Resection of the temporal segment of the eyelid was introduced by Von ammon which also had a better cosmetic outcome.

1845 – Dieffenback modified the ectropion surgery by performing resection of skin and muscle at the outer canthus in a base up triangular fashion.

1870 – Szymanowski introduced skin repair advancement at the outer canthus.

1883 – Kuhnt modified the surgical procedure by resecting conjunctiva and tarsus in a base up triangular fashion.

1893 – Meller merged Szymanowski and kuhnt procedure for better outcome.

1897 – Helmhold introduced resection of tarsus and conjunctiva in a base up triangle along with resection of skin and muscle temporal to outer canthus after splitting the grey line.

1909 – Zeigler introduced Ectropion correction by cauterization.

1913 – Verhoeff popularized adjustable sling procedure for ectropion.

ANATOMY OF THE EYELID.

Eyelids protects the globe from external damage by acting as shutters.It also serves to maintain tear film stability by spreading it over conjunctiva and cornea.

The position of the eyelid is such that in primary gaze upper lid occupies about $1/6^{th}$ of the cornea and lower eyelid just reaches the inferior limbal border.The position of the eyelid over the globe is also important to maintain lacrimal pump mechanism.

Upper eye lid crease formed by insertion of levator aponeurosis divides the upper eyelid in to orbital part superiorly and inferiorly as tarsal portion.Grey line is an important surgical landmark with minimal post operative scarring if the incision is placed in this line. It is located at the junction of conjunctiva and skin anterior to the tarsus splits the intermarginal strip into anterior and posterior portion bearing eyelashes and meibomian gland respectively.Skin and orbicularis makes the anterior part and tarus and conjunctiva contributes to the posterior part of the eyelid

Eyelid margin has a lacrimal papilla medially which bears the punctum over its summit and splits the eyelid margin in to hair bearing ciliary part laterally and lacrimal part medially.Anterior border of the eyelid margin is rounded and the posterior border is sharper.At the junction of medial and lateral canthi two eyelids meet each other.

LAYERS OF THE EYELID:

ANTERIOR LAMELLA

- Skin
- Subcutaneous areolar tissue
- Muscles(orbicularis oculi and LPS)

POSTERIOR LAMELLA

- Septum orbitale and tarsus
- Muller muscle
- Conjunctiva

LAYERS OF THE EYELID :

SKIN AND SUBCUTANEOUS TISSUE:

Eyelid skin contributes to the mobility of the eyelid by being thinnest skin of the body.

Subcutaneous tissue of the eyelid is easily distended by blood or oedema as it has no fat and contains loose areolar connective tissue.

LEVATOR PALPEBRAE SUPERIORIS:

This muscle acts an elevator of the upper eyelid.After taking origin from the lesser wing of sphenoid it descends forwards and vertically downwards and once it approaches Whitnalls ligament it fans out as aponeurosis.Then it divides in to medial horn which gets inserted in to posterior lacrimal crest and lateral horn which inturn divides the lacrimal gland in to orbital and palpebral part.

Anterior portion of levator inserts in to the skin and forms the upper eyelid crease.Posterior portion of the levator gets inserted in to the anterior surface of the tarsus.Few fibres inserts in to superior conjunctival fornix.Oculomotor nerve supplies levator muscle.

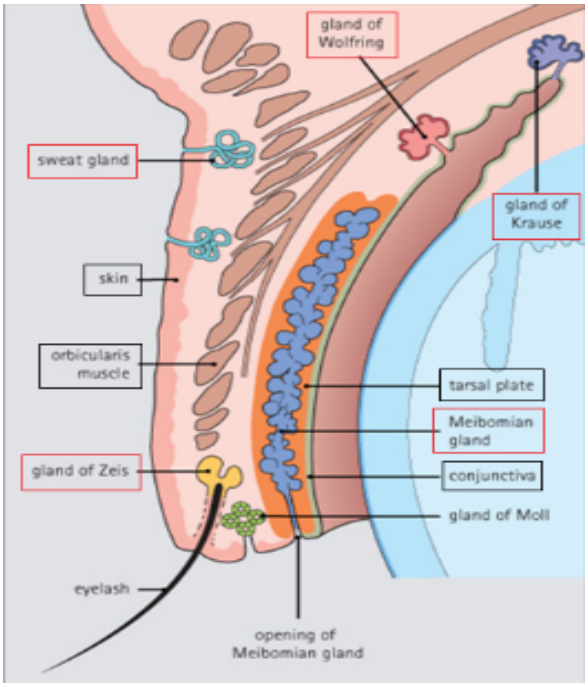
ORBICULARIS OCULI:

It is a striated muscle which aids in closure of the eyelid.It is classified into orbital and palpebral parts,which is again divided as preseptal part and pretarsal part.

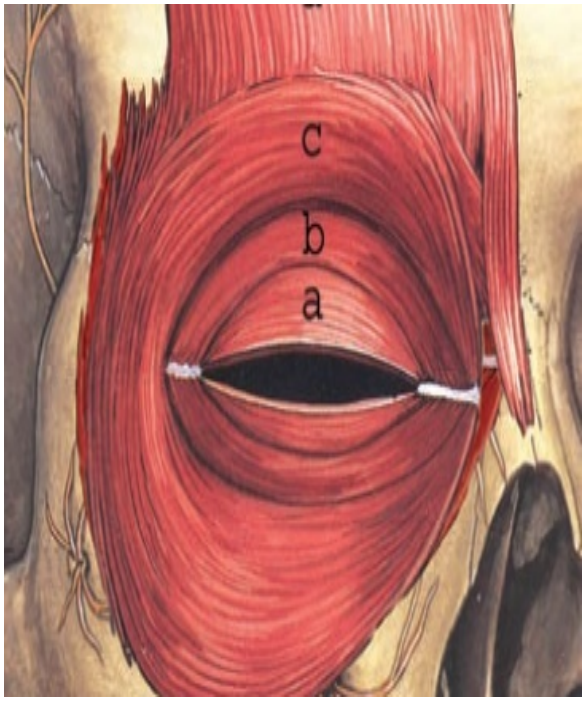
Orbital part of this muscle arises from medial palpebral ligament and from the adjoining bony structures like frontal process of maxilla,maxillary process of frontal bone and from medial canthal ligament.Superficial heads of palpebral parts originate from the medial palpebral ligament.Deep heads of palpebral part arises from posterior lacrimal crest and lacrimal fascia.

Orbital part helps in forced closure of the eyelids.Palpebral part aids in gentle closure of the eyelid. Horners muscle which is the deep head of pretarsal portion of palpebral part of orbicularis named as pars lacrimalis helps in lacrimal pump mechanism.Orbicularis muscle gets its innervations from facial nerve.

ANATOMY –LAYERS OF EYELID



PARTS OF ORBICULARIS OCULI



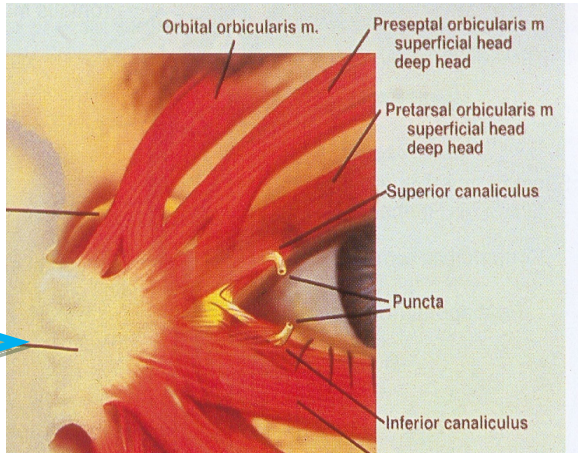
a–Pretarsal palpebral part

b–Preseptal palpebral part

c–orbital part of orbicularis

PICTURE SHOWING ORBICULARIS PARTS AND MEDIAL CANTHAL TENDON

Medial Canthal Tendon



ORBITAL SEPTUM:

It is the thin membranous sheet of connective tissue which separates the intraorbital contents from the eyelids and acts as a barrier to limit the spread of infection.Arcus marginalis is a thickening at the orbital margins at the point of its attachment with the orbital septum,after which septum becomes periorbita.Medially it lies posterior to medial palpebral ligament and lacrimal sac.Lateral palpebral ligament is posterior to the septum laterally.

During eyelid reconstructive surgery and surgeries which requires the exposure of the eyelid retractors,orbital septum has to be cut during the procedure.

TARSAL PLATE:

It is a framework of dense fibrous tissue which is responsible for Stability of the eyelids.The height of upper and lower tarsal plate is around 10mm and 5mm respectively.Upper tarsus gives attachment to mullers muscle and orbital septum superiorly.Lower tarsus provides attachment for capsulopalpebral fascia,inferior palpebral muscle and orbital septum in its lower aspect.

SURGICAL SIGNIFICANCE OF TARSAL PLATE:

Tarsal plate should be incised vertically in case of eyelid surgeries to prevent distortion of eyelids and ectropion.

Even with 4mm of the tarsal plate the stability of eyelid can be maintained, so the remainder of the upper tarsus can be taken for graft or tarsoconjunctival flap.

MULLER'S MUSCLE:

This is the layer of non-striated muscle fibre arising from the levator palpebrae superioris muscle from its terminal inferior fibres and from the inferior rectus expansion in the upper eyelid and lower eyelid inferiorly.It gets inserted in to the tarsal plate in its orbital margin.They get innervations from sympathetic nerve fibres.They contribute to 2mm of elevation of the upper eyelid.

CONJUNCTIVA:

This forms the posteriormost layer of the eyelid.The posterior surface of the tarsus and muller's muscle are tightly adherent to it. Palpebral Conjuctiva extends from lid margin up to the fornix of the conjunctiva.

LOWER LID RETRACTORS:

Inferior tarsal muscle and capsulopalpebral fascia together forms lower lid retractors. They are important for downward movement of the lower eyelid. Capsulopalpebral fascia is formed from inferior rectus muscle sheath which divides to wrap the inferior oblique muscle and blends with Lockwood's ligament and continues its course till it reaches the lower border of the tarsal plate. Lower eyelid retractor weakness leads to the eyelid malposition.

MEDIAL CANTHAL TENDON:

The origin of pretarsal and preseptal muscle together forms medial canthal tendon.It has superficial and deep part that inserts in to anterior and posterior lacrimal crest. If the posterior limb is intact then anterior limb division will not cause medial canthus malposition.In case of medial canthal reconstruction posterior limb reformation should be attempted.

LATERAL CANTHAL TENDON:

The insertion of pretarsal muscle forms the lateral canthal tendon. About 2mm posterior to lateral orbital rim the Whitnall's tubercle gives origin to this tendon.In any eyelid repair, one limb of lateral canthal tendon has to be maintained to keep the reconstructed eyelid against the globe.

BLOOD SUPPLY OF THE EYELIDS:

Eyelids receive its main arterial supply from medial and lateral palpebral arteries which arise from dorsal nasal artery and lacrimal artery.In each eyelid about 2 – 3mm away from the lid margin is the presence of marginal arterial arcade formed by the anastomoses of lateral and medial palpebral artery lying in the muscular plane level just in front of tarsal plate.Medial palpebral artery contributes the formation of peripheral arterial arcade lying in the upper tarsal border.

VENOUS DRAINAGE:

1. PRETARSAL VENOUS PLEXUS:

The structures which are superficial to the tarsus is drained by this plexus.Medially they drain in to angular vein and in to internal jugular vein.Laterally it drains in to lacrimal vein and then in to external jugular vein.

2. POST TARSAL VENOUS PLEXUS:

Structures posterior to the tarsal plate are drained via this plexus which ultimately drains in to ophthalmic veins.

ECTROPION

Ectropion is characterized by eversion of the eyelid margin away from the globe.Ectropion most commonly affects the lower eyelid.Upper eyelid ectropion can also occur following cicatricial changes of the anterior lamella secondary to previous burns or laceration.Following blepharoplasty or ptosis repair iatrogenic upper eyelid ectropion can occur.

PATHOGENESIS OF ECTROPION :

Most important six pathological elements are

1. Horizontal lid laxity
2. Medial canthal tendon laxity.
3. Facial nerve palsy causing orbicularis palsy.
4. Lower eyelid retractors disinsertion.
5. Vertical tightness of the skin.

One or more factors may co-exist in the same patient. Vigilant examination for proper identification of the underlying anatomic defect is necessary to undertake appropriate surgical correction for better successful outcome..

TYPES OF ECTROPION: A . Congenital ectropion.

B. Acquired ectropion

1. Involutional ectropion
2. Cicatricial ectropion
3. Paralytic ectropion.
4. Mechanical ectropion.

CONGENITAL ECTROPION :

It is a rare type of ectropion which occurs secondary to deficiency of eyelid skin leading to vertical shortening.This condition is associated with blepharophimosis syndrome and euryblepharon. In congenital ectropion lids are apposed at rest but eversion occurs while attempting to look up or closing the lids.Treatment is horizontal lid shortening with free full thickness grafting.

INVOLUTIONAL ECTROPION:

Involutional ectropion is the commonest of all ectropion occuring only in the lower eyelid. Involutional ectropion occurs secondary to combination of various factors.These includes canthal tendons laxity, disinsertion of the lid retractors and atrophic or paretic orbicularis oculi due to microinfarcts causing ischemic changes in the muscle fibres,Elastic and collageneous tissue fragmentation within the tarsus leading to thinning and instability. Tearing is the earliest symptom and inferior punctal eversion being the earliest sign.

Medial ectropion and punctal eversion occurs as a result of medial canthal tendon laxity.Lateral canthal tendon laxity lead to the development of lateral ectropion or generalized ectropion.Diffuse laxity secondary to both canthal tendons and orbicularis muscle is responsible for complete eversion of the entire eyelid. Identification of underlying pathological component should be done clinically for deciding proper surgical management and for achieving adequate anatomic cosmetic correction.

PATIENT WITH RIGHT EYE LOWER LID INVOLUTIONAL ECTROPION

CLINICAL ASSESSMENT OF LID LAXITY:

HORIZONTAL LID LAXITY:

This is determined by performing pinch test.In this test lower eyelid needs to be pulled away from the globe.Displacement of lower eyelid if more than 6mm away from the globe indicates laxity of the eyelid.

Snap back test can also be done where lower eyelid is pulled downwards and the speed of returning back to its original position is noted. If the lower eyelid snaps back to normal position within 2 seconds then integrity of lower eyelid is within normal limits.

MEDIAL CANTHAL TENDON LAXITY:

Integrity of medial canthal tendon is tested by distraction test where pulling the lower eyelid laterally and position of the punctum is assessed.Normally the punctal displacement is within 2mm.If the displacement of punctum is more than 2mm it indicates medial canthal tendon laxity.

If the lateral excursion of the punctum reaches more than nasal limbus it signifies severe laxity.

In case of medial canthal tendon laxity there will be rounding of the medial canthal angle with direct palpation of medial canthal tendon with simultaneous lateral traction.

METHOD TO DEMONSTRATE SNAP BACK

TEST IN RIGHT EYE LOWER LID

INVOLUTIONAL ECTROPION

LATERAL CANTHAL TENDON LAXITY:

The presence of lateral canthan laxity is grossly identified by the rounded contour of the lateral canthal tendon.Then displacement of lateral canthus on medial traction is done.If it exceeds more than 2mm then laxity of lateral canthus is confirmed.Coexisting narrow horizontal palpebral fissure also suggests canthal tendon laxity.

LOWER EYELID RETRACTOR WEAKNESS OR DISINSERTION:

Clinical signs showing retractor weakness are

Deeper inferior fornix

High resting position of the lower eyelid.

Decreased excursion of the lower eyelid in downgaze

A whitish band is seen in the inferior fornix in case of lower eyelid retractor disinsertion.

CICATRICIAL ECTROPION:

Cicatricial ectropion occurs as a result of scarring process along with vertical skin shortage or contracture following shortening of the anterior lamella of the lid which can occur following chemical injuries, thermal injuries, certain cicatrizing skin conditions like rosacea,chronic actinic skin damage,eczematoid dermatitis,atopic dermatitis,mechanical trauma and also occur following iatrogenic cause following excessive skin removal in lower blepharoplasty.

TEST TO DETERMINE VERTICAL SKIN SHORTAGE:

It is by grasping the lower lid margin and pulling it superiorly and to assess the amount of excursion above the inferior limbus.If it does not reach 2mm above the inferior limbus then it proves the presence of vertical deficiency.

RE LOWER LID CICATRICIAL ECTROPION

PARALYTIC ECTROPION:

Paralytic ectropion occurs secondary to seventh nerve palsy which occurs following bell's palsy,cerebrovascular accident,trauma and iatrogenically after resection of peripheral nerve course distal to the foramen lacerum.

Inadequate eyelid closure and poor blinking due to atonic orbicularis in this condition can lead to numerous complications like tear film abnormalities,lacrimal pump failure causing watering and poor cosmesis.

Most serious and dreadful complication are chronic ocular surface irritation,exposure keratitis and subsequent vision loss.

Neurological examination and neuroimaging is mandatory in all case of paralytic ectropion to identify the underlying cause for facial nerve paralysis.Corneal sensation should be checked in all cases especially if seventh nerve palsy follows cerebrovascular accident or stroke to rule out neurotrophic keratitis to avoid increased risk of corneal decompensation by timely intervention.

Slit lamp examination with fluorescein staining and examination under blue cobalt filter should be done in all patients presenting with ectropion especially in case of paralytic ectropion as the patient is more prone for developing exposure keratitis due to associated lagophthalmos.

PATIENT WITH LEFT EYE PARALYTIC ECTROPION WITH LAGOPHTHALMOS

EPIPHORA IN FACIAL NERVE PALSY:

Punctal eversion from lacus lacrimalis or secondary to lower eyelid ectropion.

Orbicularis muscle paresis leading to loss of pumping action there by hindering the passage of tears in to lacrimal drainage system.

Reflex hypersecretion secondary to exposure keratopathy.

INVESTIGATION:

Almost in all patients surgery is the definitive treatment of choice.Surgery is individualised depending on the underlying pathology as successful outcome depends upon the appropriate surgical procedure.

All the patients are subjected to systemic investigation before surgical management.

MANAGEMENT:

MANAGEMENT OF INVOLUTIONAL ECTROPION:

The main ageing changes in ectropion which requires correction are

Lower eyelid retractor weakness

Horizontal lid laxity.

Lamella dissociation where upward movement of posterior lamella against the fixed anterior lamella.

SURGICAL APPROACH ACCORDING TO THE PATHOGENESIS OF INVOLUTIONAL ECTROPION:

HORIZONTAL LID LAXITY:

It may be localized either at the medial canthus or lateral canthus or it can be generalized.Horizontal lid shortening to tighten the eyelid is performed to correct the lid laxity.

In case of medial canthal tendon laxity medial canthal suture is done in mild cases.In case of extensive medial canthal tendon laxity,medial canthal resection can be done.

If lateral canthal tendon is the area of mild laxity,lateral canthal suture is done.In extensive lateral canthal tendon laxity lateral tarsal strip procedure can be done.

If there is generalized laxity – Full thickness eyelid resection is done.

If generalized laxity is associated with excessive skin – Horizontal shortening along with blepharoplasty known as Kuhnt –Symanowski procedure is done.

LATERAL CANTHAL LAXITY:

LATERAL CANTHAL SUTURE:

In this procedure periosteum of the lateral wall is exposed. Then lateral canthal tendon is sutured to the periosteum of the lateral wall.

METHOD:

About 5mm subciliary incision in the lower eyelid in its lateral aspect.

The incision is deepened such that lateral edge of tarsal plate,lateral canthal tendon is exposed and it is anchored with lateral orbital wall periosteum.

LATERAL TARSAL STRIP :

This is the widely used procedure currently for moderate to severe involutional ectropion.

SURGICAL PRINCIPLE:

In this procedure shortening of the eyelid is done then new canthal tendon is formed out of the tarsal plate in its lateral aspect.

METHOD:

A horizontal incision is made at the level of lateral canthus.Then lateral orbital rim is exposed by a blunt dissection after making lateral canthotomy at its inferior limb.

Depending on the amount of lid laxity, position of new lateral canthus is made by manufacturing a new tendon from the tarsal plate in its lateral aspect after excising orbicularis,skin and conjunctiva from the tarsus after making grey line incision.

Then a double armed 4/0 prolene is passed in to the periosteum which is then inserted through the tarsus medial and lateral to the suture loop.

Then on tightening the suture loop pulls the tarsus to the orbital rim.

Then orbicularis is closed with absorbable sutures and then skin is closed with interrupted sutures.

COMPLICATIONS:

They include

1.Recurrence

2.Granulomas

3.Horizontal palpebral aperture narrowing

4.Inclusion cysts and

5.Malposition of lateral canthus.

.

PICTURE SHOWING ATTACHMENT OF LATERAL TARSAL STRIP TO PERIOSTEUM.

SURGICAL MANAGEMENT OF MEDIAL CANTHAL LAXITY:

MEDIAL CANTHAL SUTURE:

This procedure is carried out in case of mild ectropion.It can be done in the following ways

1.Anterior limb stabilizing suture.

2.Posterior limb suture.

a. Open technique.

b. Closed technique.

ANTERIOR LIMB STABILISING SUTURE:

PRINCIPLE:

In this procedure shortening of the anterior limb of the medial canthal tendon by suturing lower tarsal plate in its medial aspect to the medial canthal tendon.

METHOD:

An incision is made below the lower canalaliculus ,then tarsal plate medial aspect is exposed.

Expose the medial canthal tendon at its insertion.

Pass non – absorbable suture below the lower punctum from the tarsus to the medial canthal tendon keeping it superior and posterior,then the suture is tied.

Wound is closed in layers.Punctal malposition can occur secondary to excessive tightening of the suture.

POSTERIOR LIMB SUTURE:

1.**OPEN TECHNIQUE:**

PRINCIPLE:

Reforming sutures from medial canthal tendon is placed in the periosteum after exposing the medial orbital wall.Then suturing is done from the tarsal plate in its medial aspect to the posterior lacrimal crest over its periosteum.

METHOD:

An incision is made over the caruncle up to the tarsal plate in its medial aspect.

A probe is placed in the inferior canaliculus,behind the probe the medial orbital wall and lacrimal sac is exposed,then the perioseum is exposed.

Then a double armed non-absorbable suture is passed from the tarsal plate in its medial aspect to the posterior lacrimal crest or through the periosteum in the medial orbital wall.

Then the posterior limb of medial canthal tendon is reformed by the non absorbable suture.Then conjunctiva is sutured.

2.**CLOSED TECHNIQUE:**

PRINCIPLE:

A reforming stitch is placed on the posterior limb of medial canthal tendon without the exposure of medial orbital wall.

METHOD:

Exposure of the tarsal plate in its medial aspect is made by making incision inferior to inferior punctum and a probe is kept in the inferior canaliculus.

Through the tarsal plate in its medial aspect a double armed non absorbable suture is passed twice close to the punctum avoiding canaliculus.

Then the suture is passed behind the canalicus till it reaches the medial canthus,then the needle is passed posteriorly to engage the surgical periosteum i.e medial orbital wall tissue just superior and behind the lacrimal sac near its fundus level.

Then the suture is directed forward and brought through skin by making an incision with 11 blade at its exit to free the needle down till periosteum which is inferior to the medial brow and superior to medial canthal tendon.

After passing both sutures through the skin,both the ends of the sutures are tightened which pulls the punctum posteriorly,upwards and medially.

Then sutures are tied together and buried deep within the wound.Wound is closed in layers.Recurrence is the possible complication of this procedure.

MEDIAL CANTHAL RESECTION:

This procedure is indicated in case of severe medial canthal tendon laxity.

PRINCIPLE:

In the medial aspect of the eyelid horizontal lid shortening is done.The inferior canaliculus is marsupialised in to the conjunctiva after cutting the canaliculi during lid resection.Then reconstruction of posterior limb of medial canthal tendon is carried out.

METHOD:

Full thickness eyelid is cut vertically lateral to the caruncle involving canaliculus sparing most of it.

Palpation of the posterior lacrimal crest is done behind the probe after passing a probe through the cut canaliculus.

Then exposure of medial orbital wall is carried out above the posterior lacrimal crest in its upper aspect.Then conjunctiva is opened posterior to caruncle.

Then double non absorbable suture is passed either through the periosteum of the posterior lacrimal crest or above the medial orbital wall level.

Then resection of as much of the eyelid is done after pulling the cut end of the lateral part of the eyelid towards the fixation suture.

Then fixation suture is passed through the resected tarsus then the cut end of the canaliculus is sutured to the posterior aspect of the tarsus with absorbable suture.

Then each arm of the fixation suture is tied to the resected tarsus.Then conjuctival closure is done with the interrupted sutures.

Reformation of the posterior limb of the medial canthal tendon is done by tying the fixation sutures.Then wound is closed in layers.

Complications are recurrence and granuloma formation for which medial canthal suturing and granuloma excision is done respectively.

FULL THICKNESS LID RESECTION:

INDICATION:

It is done in cases of generalized lid laxity.

METHOD:

Full thickness resection of the eyelid is done in a pentagonal fashion at the place of maximum lid laxity or it can be done 5mm medial to the lateral canthus.

KUHNT-SYMANWSKY PROCEDURE (HORIZONTAL LID SHORTENING WITH BLEPHAROPLASTY):

INDICATION:

This procedure is done in case of generalised lid laxity with excessive skin

PRINCIPLE:

In this procedure excision of excess skin is done in a lateral triangular fashion from a blepharoplasty flap and shortening of the lid is done under the flap.

METHOD:

A subciliary incision is made from inferior punctum up to lateral canthus about 2mm below the lash line.

Then the incision is extended laterally and downwards for 8mm along the skin crease.

Skin flap is undermined from the orbicularis muscle. Then procedure is carried out similar to horizontal lid shortening.

Removal of pentagon shaped lid tissue is done beneath the skin flap after cutting through the lid margin.

Pentagon shaped lid defect is repaired.Across the reconstructed eyelid blepharoplasty flap is laid and excess skin is excised in the form of lateral base up triangular fashion.

Lateral skin crease incision and subciliary incision are sutured.

Complications arise following unrecognized lateral canthal laxity which leads to shortening of the horizontal palpebral aperture and retraction of the lower eyelid can occur.This condition can be managed by performing lateral canthal suture.

LOWER EYELID RETRACTOR SHORTENING OR REATTACHMENT:

It is indicated in case of lid retractor weakness or disinsertion.

PRINCIPLE :

At the lower border of tarsus or at the inferior punctal region, reattachment and shortening of lower lid retractor is done.

DIAMOND SHAPED TARSOCONJUNCTIVAL EXCISION AND RETRACTOR PLICATION:

INDICATION:

It is indicated in case of lower lid retractor weakness along with punctal ectropion in the absence of significant horizontal lid laxity.

METHOD:

A probe is placed in the inferior canaliculus.

A diamond shaped excision of tarsoconjunctiva is made below the punctum such that the apex of the diamond lies just below the punctum with enough space above it for the suture to enter in to the tarsus.

From the lateral aspect of the diamond apex ,horizontal cut is made through the conjunctiva for about 5mm length.

Immediately below the lower punctum one arm of the absorbable double armed suture is passed through the diamond apex following which the lacrimal probe is removed.

Then through the conjunctiva just below its inferior apical cut other arm of the suture is passed.

Then through the conjunctiva the sutures are moved laterally to grasp the lower lid retractors.

It is easier to grasp the retractor in the central part of the lid than in the medial aspect which is possible by extending the conjunctival incision.

Sutures are tied and buried within the wound.

Complication which can occur following this procedure is punctal displacement which can be corrected by suture replacement.

LAZY – T PROCEDURE:

INDICATION:

In case of horizontal lid laxity with medial ectropion without predominant involvement of medial canthal tendon.

PRINCIPLE:

In this procedure,full thickness horizontal lid resection is done to correct excessive horizontal lid laxity.This is accompanied by diamond shaped excision of tarsoconjunctiva with shortening of lower eyelid retractor to correct the punctal eversion

METHOD:

An incision is made 4mm lateral to the inferior punctum through the lid margin.

Then cut edges are overlapped and lateral to the incision full thickness pentagon of the lid tissue is resected.

A probe is kept in the inferior canaliculus and a diamond shaped excision of the tarsoconjunctiva is done.

Contrary to grasping a lower lid retractor by passing a absorbable suture,in this procedure an inverting suture is placed.

Inverting sutures are made by passing double armed suture from the conjunctival side just below the tarsus in its inferior aspect then it is passed further in to the orbicularis and is brought out and tied over the skin at a lower level.

Then horizontal defect is repaired and the inverting sutures are tied over the bolster on the skin.

Complication is notching of the eyelid margin following excessive inversion of medial aspect of the eyelid.Revision of the wound should be undertaken for this condition.

TARSAL ECTROPION REPAIR(SHELF ECTROPION OR TARSAL EVERSION):

INDICATION:

This is indicated in generalized lower lid retractor disinsertion.

PRINCIPLE:

To the lower border of the tarsus reattachment of the lower lid retractors are done through posterior conjunctival approach.

METHOD:

Through the grey line lower lid traction sutures are placed.

An incision is made below the tarsal plate through the conjunctiva.

Conjunctiva is undermined till the exposure of lower eyelid retractors which is identified by asking the patient to look up and down.

Then a absorbable long acting suture is placed through the following structures in order are lower eyelid retractor,conjunctiva over its inferior cut edge and the tarsal plate in its lower border and they are tied over the wound.

If during suture placement, retraction of the eyelid occurs then a smaller bite is taken through the retractor.

If adequate inversion does not occur following suture placement then deeper bite of the suture is taken through the lower lid retractor.

In case of satisfactory suture placement,on either side of the midline two more sutures are placed and they are tied over the wound .

Then the traction suture is removed.

Inadequate inversion can occur as a complication following this procedure which is treated by lid tightening and placing inverting suture.

MANAGEMENT OF CICATRICIAL ECTROPION:

Z-PLASTY:

INDICATION:

Localised shortage of skin to lengthen a localized scar for better cosmetic appearance as it breaks up the continuity of the scar.

PRINCIPLE:

In this procedure transposition of two skin flaps are used to lengthten the skin in the line of scar contraction though the skin at right angles to it is shortened.

It also alters the line of scar and by means of tissue transfer it releases a tension line.

METHOD:

In case of lid margin involvement,resection of the notch is carried out and then defect is repaired before planning z plasty.

Vertical line is marked over the line of scar.

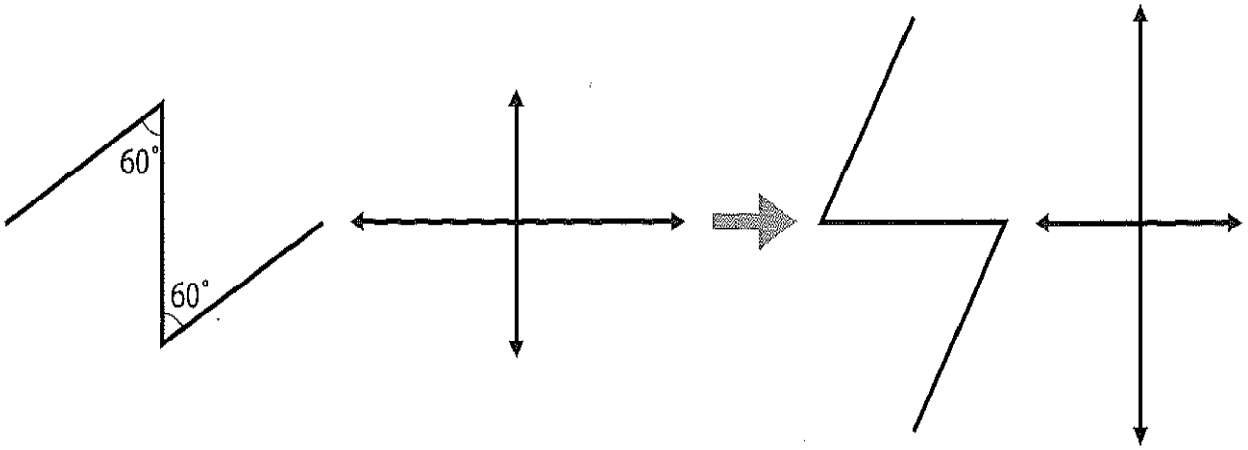
Then each end of the scar is marked and another line is drawn from the end at an angle of 60 degree to the vertical line.

Then undermine the skin and the skin flaps are cut and the deep scar tissue is excised.

Then transposition and suturing of the flap is done.

In the line of initial scar a traction sutures can be placed to keep the lid on traction for about 48 hours.

Skin sutures can be removed after a week.



COMPLICATIONS:

Insufficient vertical lengthening and persistence of ectropion can occur secondary to underlying horizontal laxity for which mobilization of tissue or placement of graft is done.

Scarring of the flaps can form which is treated with massage and local steroids.

SKIN REPLACEMENT PROCEDURE:

INDICATION:

Cicatricial ectropion with generalized shortage of the skin.

PRINCIPLE:

In this procedure graft or flap is used to replace the skin.Among the two ,local flap is preferable.

In case a graft is used then a full thickness graft is preferable than split skin graft except in cases of large defect without enough skin as in burns because full thickness skin grafts has a little chance of post operative contraction .

PREFERABLE DONOR SITES ARE

1.Retroauricular region.

2.Upper eyelid.

3.Inner aspect of the upper arm.

4.Supraclavicular region.

METHOD:

In the area of the defect,an incision is made parallel to the margin of the lid following which scarred tissue and skin is freed until the correction of ectropion.

As per the requirement,local graft or flap is harvested and then tied over the defect with absorbable suture.Then a pressure dressing is kept for 48 hours.

Then stab incisions are made over the graft in case of large graft or to prevent hemorrhage collection under the graft.

COMPLICATIONS:

1.HAEMORRHAGE

It can collect under the graft,which can be treated by aspirating with a syringe ,with a wide bore needle,pressure bandage can be reapplied along with systemic antibiotics.

2.INSUFFICIENT CORRECTION:

In mild cases improvement can be achieved by lateral canthal elevation or support and lid tightening procedure.In severe cases more tissues can be added.

MANAGEMENT OF PARALYTIC ECTROPION:

CONSERVATIVE MANAGEMENT :

Lubricating eye drops,gels and ointment should be used generously to improve the symptoms.

Taping of the temporal half of the lower eyelid adviced during night time.

Moist chambers can be used.

SURGICAL MANAGEMENT:

BOTULINUM TOXIN INJECTION causes levator paralysis there by ptosis thus protects the cornea.

In case of permanent paralysis suspension procedures, tarsorrhaphy,medial or lateral canthoplasties can be done.

SUSPENSION PROCEDURE -GOLD WEIGHT IMPLANT:

Upper eyelid gold weight suspension on the anterior tarsal surface provides closure of the eyelids through gravity.Different gold weight suspension in various sizes is selected and attached using double sided tape to the eyelid temporarily to choose the best suspension that maintains lid closure adequately without compromising the pupillary axis.

SILICONE /SIALISTIC RODS:

For positioning of the silicone rod,exposure of the lateral orbital rim is done about 3mm inferior to the lateral palpebral tendon and then a hole about 1.5mm is drilled in the lateral orbital rim which was already exposed.

Then exposure of medial canthal tendon is carried out in the medial canthal area is done following which a silicone rod of about 1mm thickness which is attached beneath the medial palpebral tendon after passing it posterior to the anterior limb of the tendon.

Then the rod is taken out through the lateral canthal area by passing it under the pretarsal area of the orbicularis.Then the rod is taken outside through the hole made in the lateral orbital wall and the rod is fixed with a watzke sleeve.

COMPLICATION: Rod migration, Skin erosion and infection.

DIRECT NERVE REPAIR AND GRAFTING:

This gives excellent result when it is done early in clean traumatic injuries.This procedure cannot be done in cases of distal nerve injury.

In this procedure grafts from the C3 and C4 cervical plexus of either side is used to approximate with the trunk of the facial nerve without aany tension.

NERVE CROSS OVER:

For this procedure cranial nerves like spinal accessory nerve, glossopharyngeal and hypoglossal nerves cam be employed in cases of facial nerve palsy following intracranial lesions.

Complications following this procedure are functional loss of the donor nerve and uncoordinated movements\

MUSCLE TRANSFERS

It can also be tried in combination with above procedures.

STATIC PROCEDURE:

In this procedure though the eyelid closure is adequately made but the eyelid motility is not restored.

TARSORRHAPHY :

This is the simplest procedure carried out to protect the cornea .In tarsorrhaphy the palpebral aperture is narrowed in both horizontal and vertical directions.It can be done on temporary or permanent basis.

In case of temporary tarsorrhaphy,both eyelids are sutured together without or little excision of eyelid tissue thus the procedure is reversible with regain of relatively normal eyelid margins when the tarsorrhaphy is undone.It can be performed as a lateral tarsorrhaphy or central tarsorrhaphy.

In permanent tarsorrhaphy,both the eyelids are sutured together there by narrowing the horizontal palpebral fissure.It involves excision of soft tissues of the eyelids and there by permanently protecting the cornea.

B)LEE MEDIAL CANTHOPLASTY:

This procedure is used to improve to prevent corneal exposure.

In this procedure,in the area medial to lacrimal punctum both the upper and lower eyelids are sutured together after undermining the skin,this consequently narrows the horizontal palpabral fissure and vertical interpalpebral distance at the level of medial canthus.

LATERAL CANTHAL ELEVATION:

PRINCIPLE:

The lateral canthus can be anchored with lateral canthus suture.For the sufficient elevation of lateral canthal tendon,lateral canthal tendon and other associated structures has to be divided.By transposing the skin flap from upper lid to lower eyelid,lower eyelid skin shortage can be corrected and this also allows good exposure for the surgery.

INDICATIONS:

Conditions causing lateral canthal depression like trauma,facial nerve palsy and in cases of cicatricial changes of the eyelid.

PROCEDURE:

To elevate the required amount of lateral canthus,first a skin and the muscle flap is raised from the upper eyelid such that its base lies just above the lateral canthus.

Similarly skin and muscle incision is made in the lower lid from lateral canthus as that of the upper lid flap.

Then the lateral canthal tendon is cut and any structures which prevents the elevation of the lateral canthus like orbital septum is also cut during the procedure.

Lateral canthal tendon is then sutured to the lateral orbital wall at its periosteum at a required level.

Then the pedicle flaps are transposed and interrupted sutures are used to appose it.

COMPLICATIONS:

Too high or too low position of the lateral canthus both cosmetically and functionally can occur during the procedure.

LATERAL TARSAL STRIP PROCEDURE:

In this procedure eyelid is shortened and then by using tarsal plate strip a new canthal tendon is formed.

MISCELLANEOUS PROCEDURE:

BROW LIFT

CHEEK LIFT

FACIAL SLING - In recurrent cases

FOLLOW UP:

Every patient is asked to come for regular follow up after 1 week and after three months.

During each visit the following are assessed

- Surgical wound site
- Position of lower eyelid
- Integrity of lower lid retractors
- Canthal tendon integrity.

AIM OF THE STUDY

To evaluate the etiology and outcome of different surgical modalities applicable in the management of various types of ectropion.

MATERIALS AND METHODS

A prospective study was carried out on 25 patients with ectropion at orbit and oculoplasty clinic,RIOGOH,Chennai during the period from September 2014 to August 2015.

Out of 25 patients majority were males,only 3 of them were females. They were in the age group of 20 – 70 years.Majority of them presented with involutional ectropion followed by cicatricial and paralytic ectropion.

INCLUSION CRITERIA:

Patients with following presentations were included in the study.

Involutional ectropion.

Cicatricial ectropion.

Paralytic ectropion.

EXCLUSION CRITERIA:

Patients with ectropion secondary to

1. Mechanical cause.
2. Ectropion with co-existing eyelid malignancy.

EVALUATION OF PATIENTS:

History and detailed clinical examination was carried out in all cases presented with ectropion.

Snap back test and pinch test were done to detect horizontal lid laxity.

Distraction test and examination of contour of the medial and lateral canthal tendon were assessed to detect the canthal tendon laxity.

Integrity of retractor assessment was done

Test to detect the vertical deficiency of the skin was carried out.

Slit lamp examination with fluorescein staining for evaluation of anterior segment to rule out exposure keratitis was done.

Schirmer's test done to rule out dry eye.

Preop systemic investigations like

- Hemoglobin.
- Bleeding time
- Clotting time and
- Random blood sugar were done in all patients.

SURGICAL MANAGEMENT:

Appropriate surgical management was planned depending upon the type of ectropion and underlying pathogenesis for better surgical outcome.

1. **INVOLUTIONAL ECTROPION AND PARALYTIC ECTROPION** :

Lateral tarsal strip with or without medial canthoplasty depending on the integrity of medial canthal tendon.

2. **CICATRICIAL ECTROPION**

a) Mild ectropion – Z Plasty

b) Ectropion with generalized defect – Scar excision with skin grafting.

FOLLOW UP:

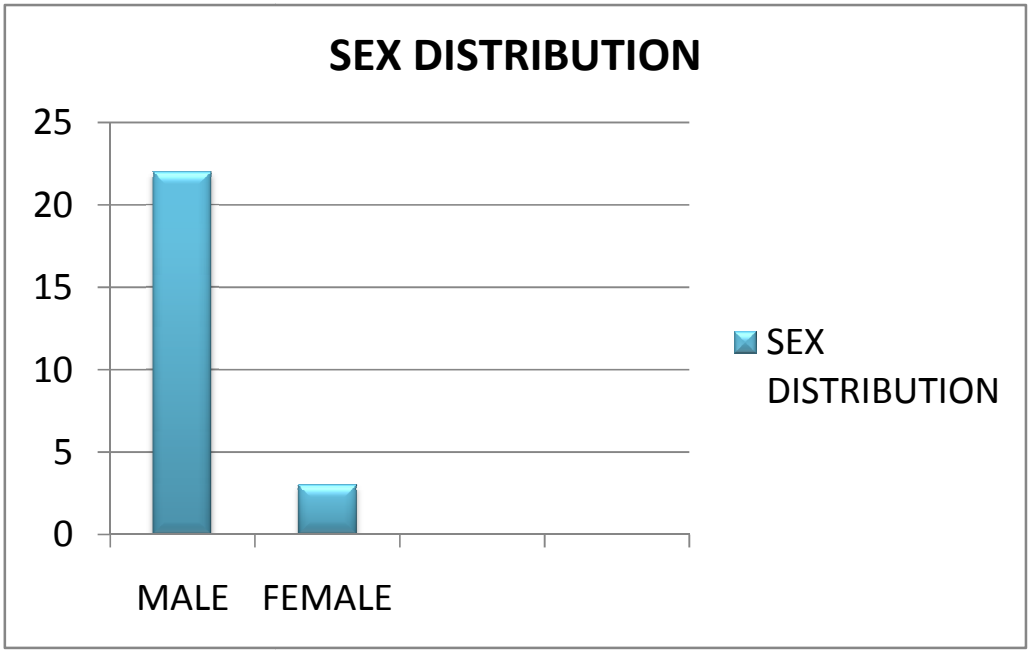
- All patients were followed in the immediate post op period,after 1week,3 weeks and after three months after surgery.
- During each visit the following parameters were assessed:
  - Improvement in symptoms like watering
  - Surgical wound site.
  - Position of lower eyelid
  - Integrity of lower lid retractor & canthal tendon

RESULTS

SEX DISTRIBUTION AMONG THE STUDY PATIENTS

SEX	NO OF CASES	% OF TOTAL
Male	22	88%
Female	3	12%

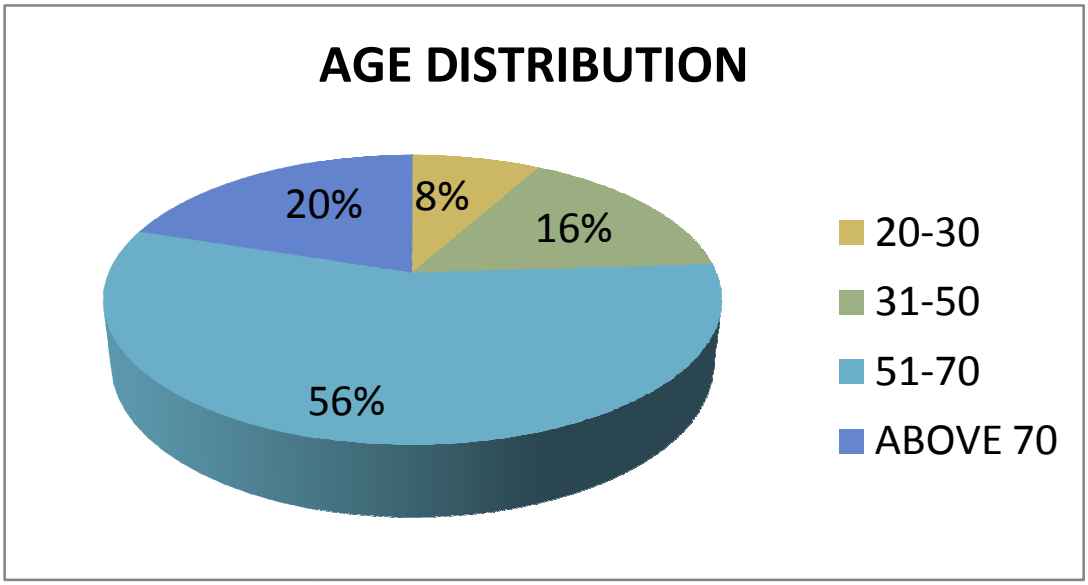
In this study,out of 25 patients majority of them were males out of the total 25 patients 22(88%) were males and remaining 3(12%) were females.



AGE DISTRIBUTION AMONG THE STUDY POPULATION

AGE GROUP	NUMBER OF CASES	% OF TOTAL
20 – 30 years	2	8
31 – 50 years	4	16
51 – 70 years	14	56
Above 70 years	5	20

In the above mentioned study majority of the patients are in the age group of 51 – 70 yrs(56%) followed by above 70 yrs (20%) , 31 – 50 yrs (16%), and 20-30 yrs (8 %). The age distribution is shown accordingly in the below mentioned pie chart.

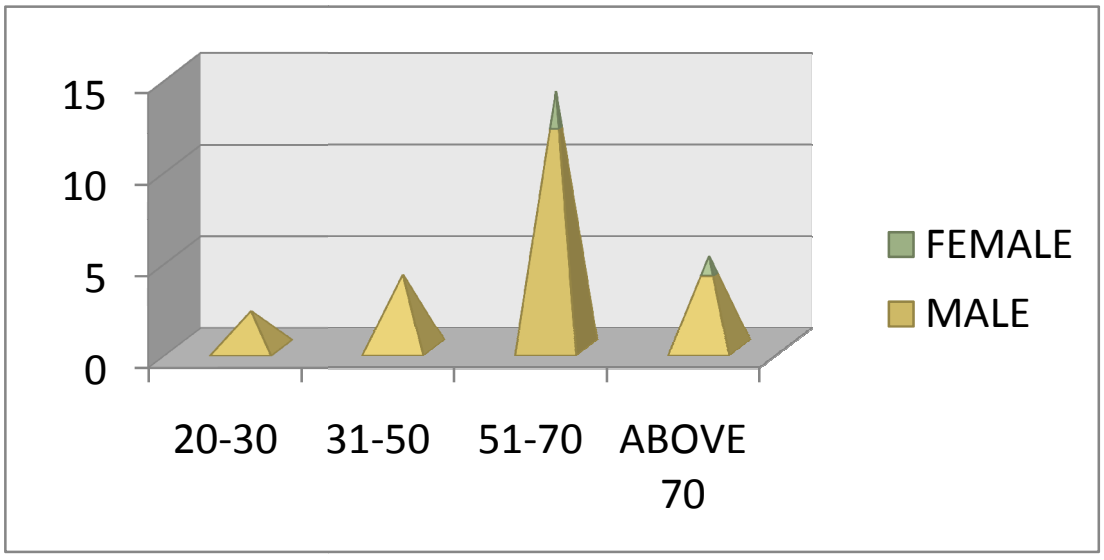


AGE AND SEX DISTRIBUTION OF THE STUDY PATIENTS

AGE GROUP (IN YEARS)	NUMBER OF CASES			% OF TOTAL
	Male	Female	Total	
20 – 30	2	-	2	8
31 – 50	4	-	4	16
51 – 70	12	2	14	56
Above 70	4	1	5	20

In my study mentioned above majority of the patients are males predominantly in the age group of 51 to 70 yrs followed by other age groups. The same is depicted in the chart below.

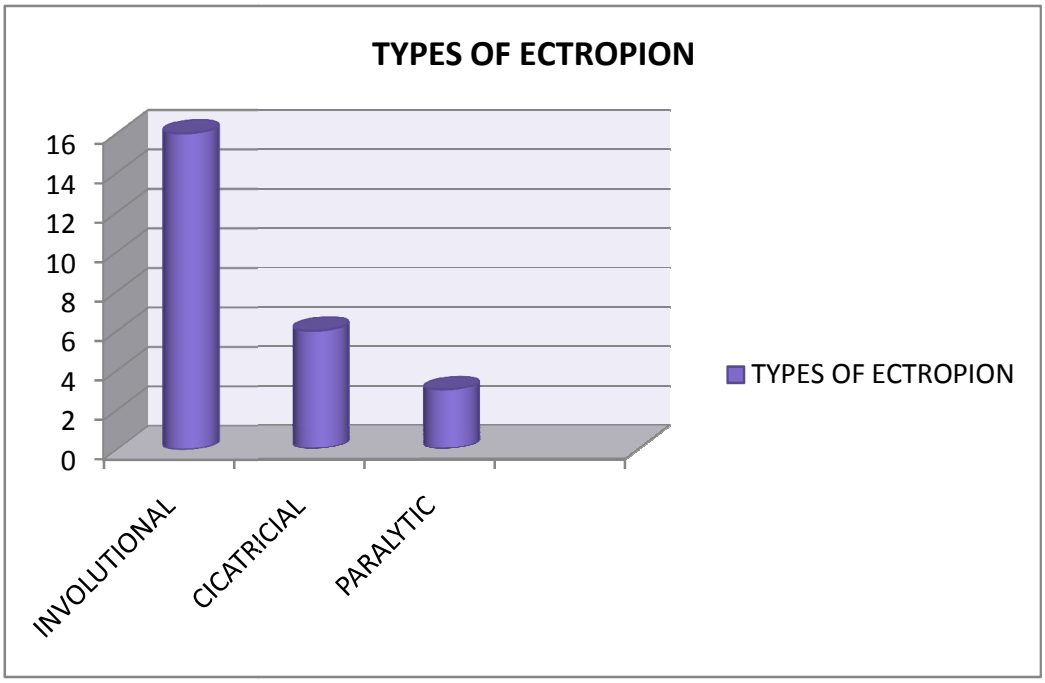
AGE AND SEX DISTRIBUTION OF THE STUDY PATIENTS



DIFFERENT TYPES OF ECTROPION IN STUDY GROUP

TYPES OF ECTROPION	NUMBER OF CASES	% OF TOTAL
INVOLUTIONAL	16	64
CICATRICIAL	6	24
PARALYTIC	3	12

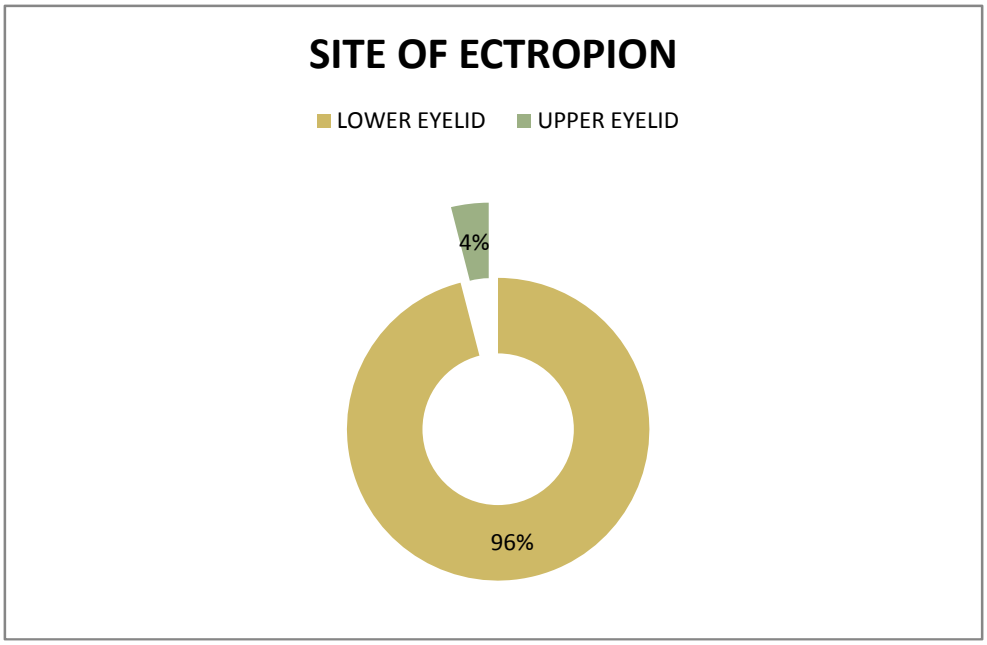
In this study,among total 25 patients, 16 patients(64%) had involutional ectropion, 6 patients(24%) presented with cicatricial ectropion and 3 patients (12%)with paralytic ectropion.Thus in my study majority had involutional ectropion.The same is given by the chart below



SITE OF ECTROPION:

EYELID	NO OF CASES	% OF TOTAL
Lower eyelid	24	96
Upper eyelid	1	4

In my study mentioned above out of 25 patients ,24patients(96%) presented with lower eyelid ectropion and 1 patient (4%) alone presented with upper eyelid ectropion. The following chart depicts the same



PATIENT WITH LEFT EYE UPPER LID CICATRICIAL ECTROPION

LAGOPHTHALMOS:

LAGOPHTHALMOS	NUMBER OF CASES	% OF TOTAL
PRESENT	NIL	0
ABSENT	3	12

In my study mentioned above 3 patients(12%) who had inadequate eyelid closure secondary to paralytic ectropion got corrected after surgery(lateral tarsal stripping with medial canthoplasty). These patients regained better aesthetics post operatively.

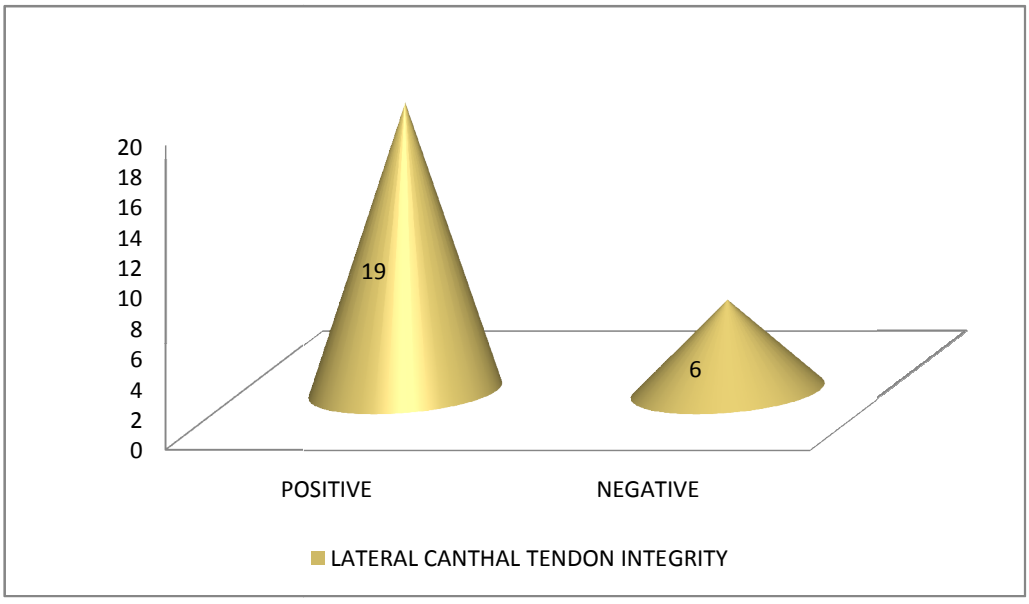
INTEGRITY OF LATERAL CANTHAL TENDON

Positive - Lateral canthus can be pulled medially for more than 3mm on medial traction

Negative - Integrity of lateral canthus is good.

LATERAL CANTHAL TENDON	NUMBER OF CASES	% OF TOTALs
Positive	19	76
Negative	6	24

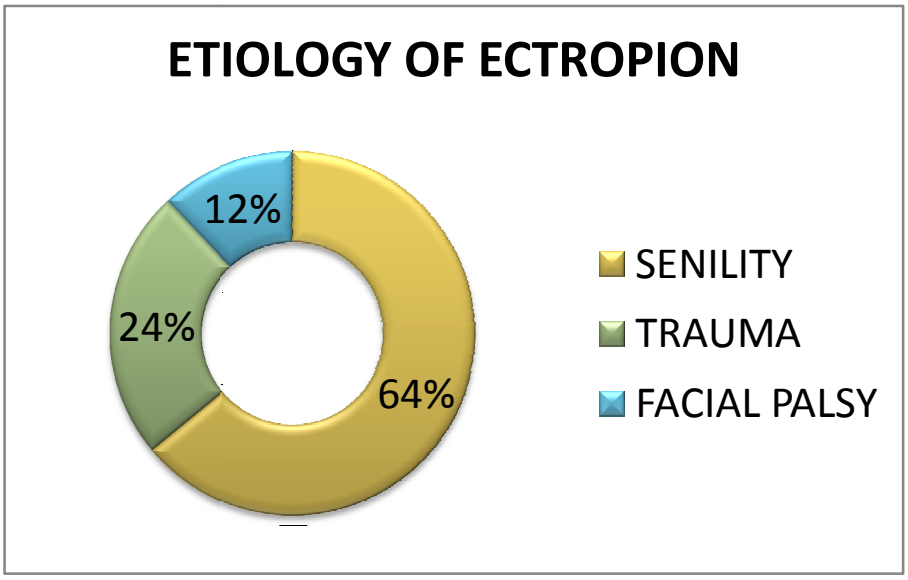
In the study mentioned above,out of 25 patients with ectropion,19 patients(76%) presented with laxity of lateral canthus.Remaining 6(24%)patients had good integrity of lateral canthal tendon.The same is depicted in the chart below



ETIOLOGY OF DIFFERENT TYPES OF ECTROPION

ETIOLOGY	NUMBER OF CASES	% OF TOTAL
Senility	16	64
Trauma	6	24
Facial palsy	3	12

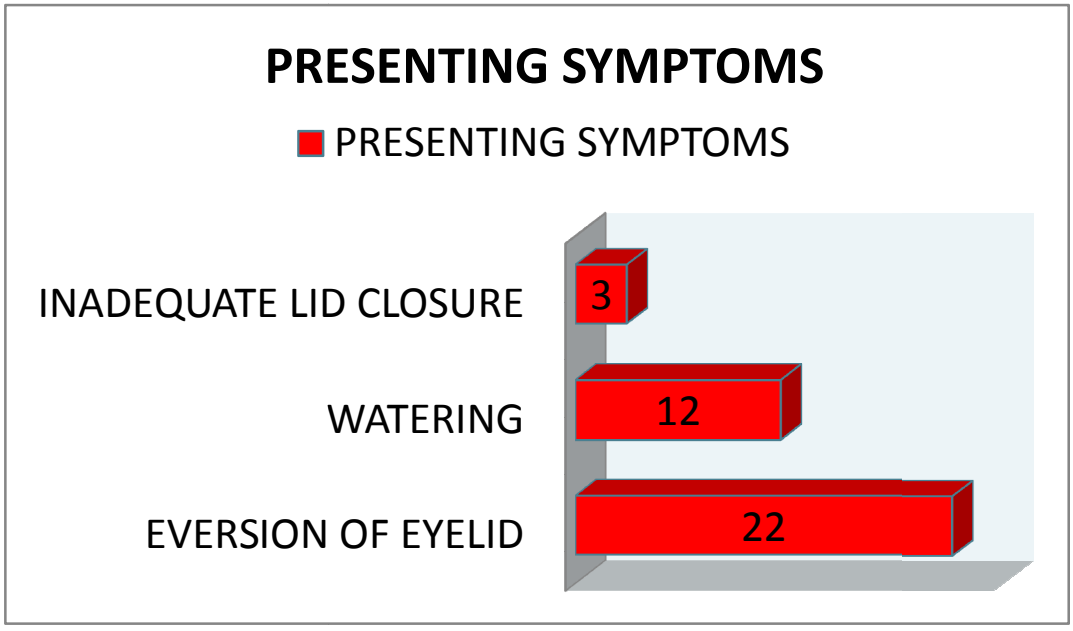
The most common cause for ectropion in my study is old age with 16 patients(64%) followed by 6 patients(24%) due to traumatic etiology and 3 patients(12%) due to facial palsy. Thus senility is the major etiology for ectropion in my study. The same is mentioned in the below given chart.



PRESENTING SYMPTOMS OF THE STUDY PATIENTS

PRESENTING SYMPTOMS	NUMBER OF CASES	% OF TOTAL
Eversion of the eyelid	22	88
Watering	12	48
Inadequate lid closture	3	12

In this study ,eversion of the lower eyelid was the major presenting symptom in 22 patients(88%) followed by watering in 12 patients(48%) and 3 patients(12%) presented with inadequate lid closure. The same was mentioned in the bar chart below.



GRADING OF MEDIAL CANTHAL LAXITY:

Displacement up to the nasal limbus +

Displacement up to the pupil ++

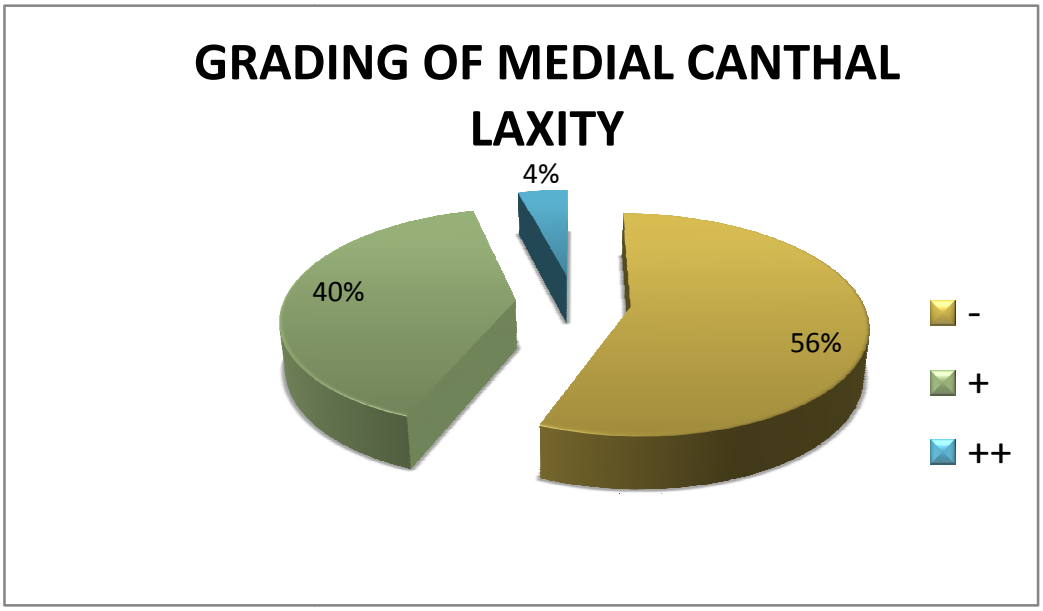
Patient with good integrity of medial canthal tendon -

MEDIAL CANTHAL LAXITY	NUMBER OF CASES	% OF TOTAL
+	10	40
++	1	4
-	14	5

In my study mentioned above 10 patients (40%) had mild medial canthal laxity with displacement of medial canthus upto nasal limbus and 1 patient(4%) had severe medial canthal laxity with displacement upto pupil on distraction test.

In the other 14 patients the integrity of the medial canthus is maintained.

THE FOLLOWING PIE CHART SHOWS GRADING OF MEDIAL CANTHAL LAXITY:

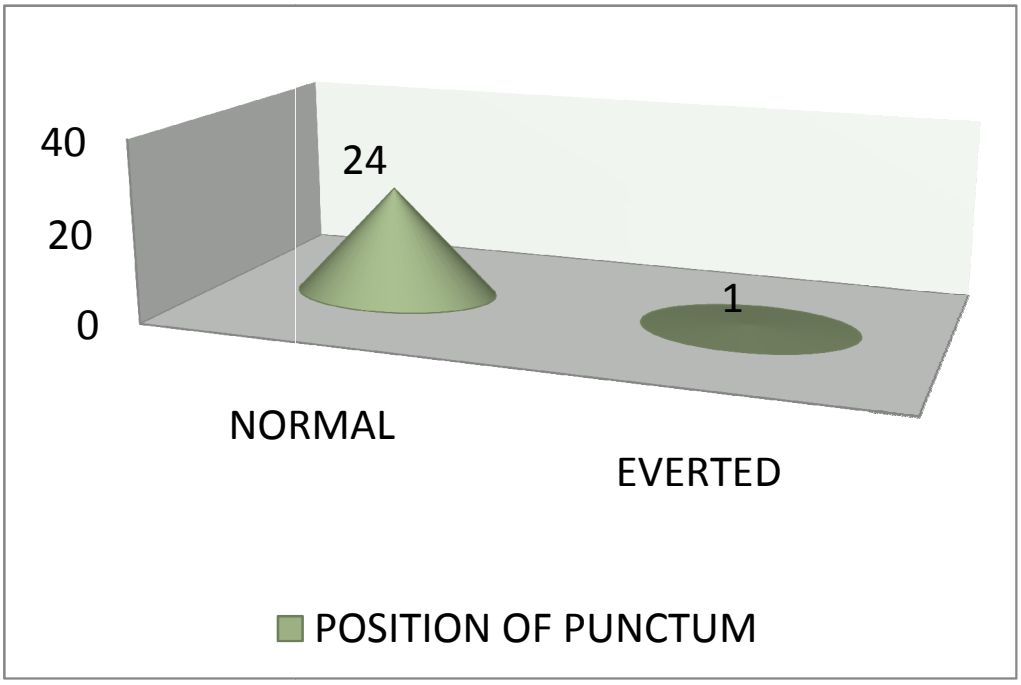


TEST TO DEMONSTRATE MEDIAL CANTHAL LAXITY

POSITION OF PUNCTUM

PUNCTAL POSITION	NUMBER OF CASES	% OF TOTAL
NORMAL	24	96
EVERTED	1	4

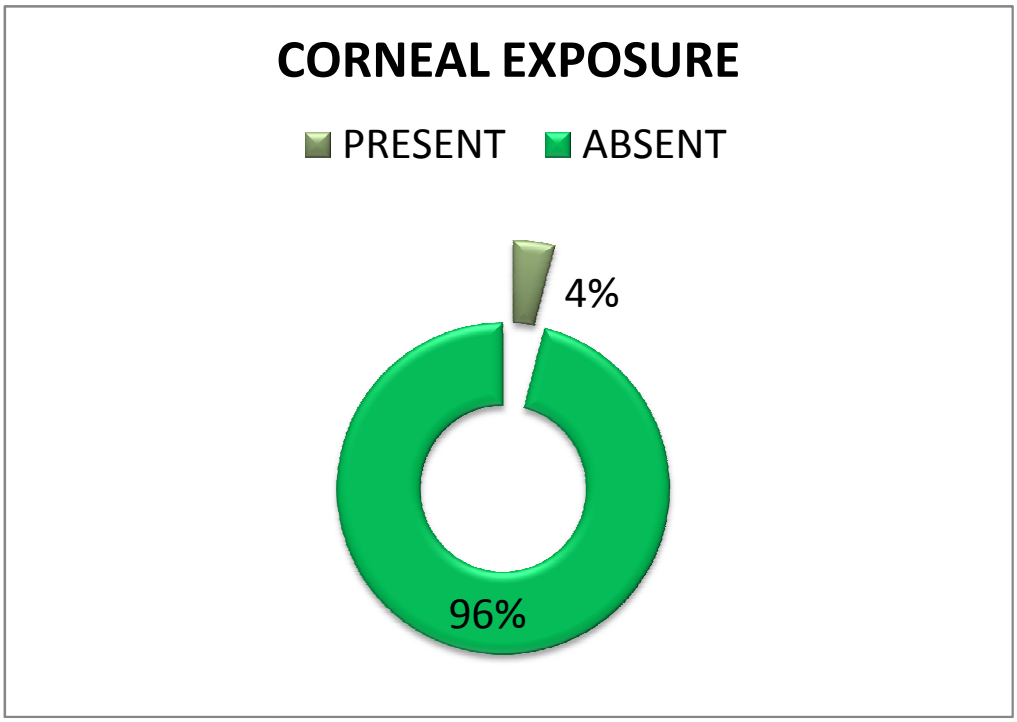
In the study mentioned above only one patient presented with punctal eversion while all the other 24 patients (96%) the punctal position is maintained.The same is depicted in the chart below



CORNEAL EXPOSURE IN THE STUDY PATIENTS

Corneal exposure	Number of cases	% of total
Present	1	4
Absent	24	96

In my study mentioned above exposure keratitis is present in one patient(4%) which was detected by corneal staining and the rest had no exposure keratitis. The same is mentioned in the diagram below



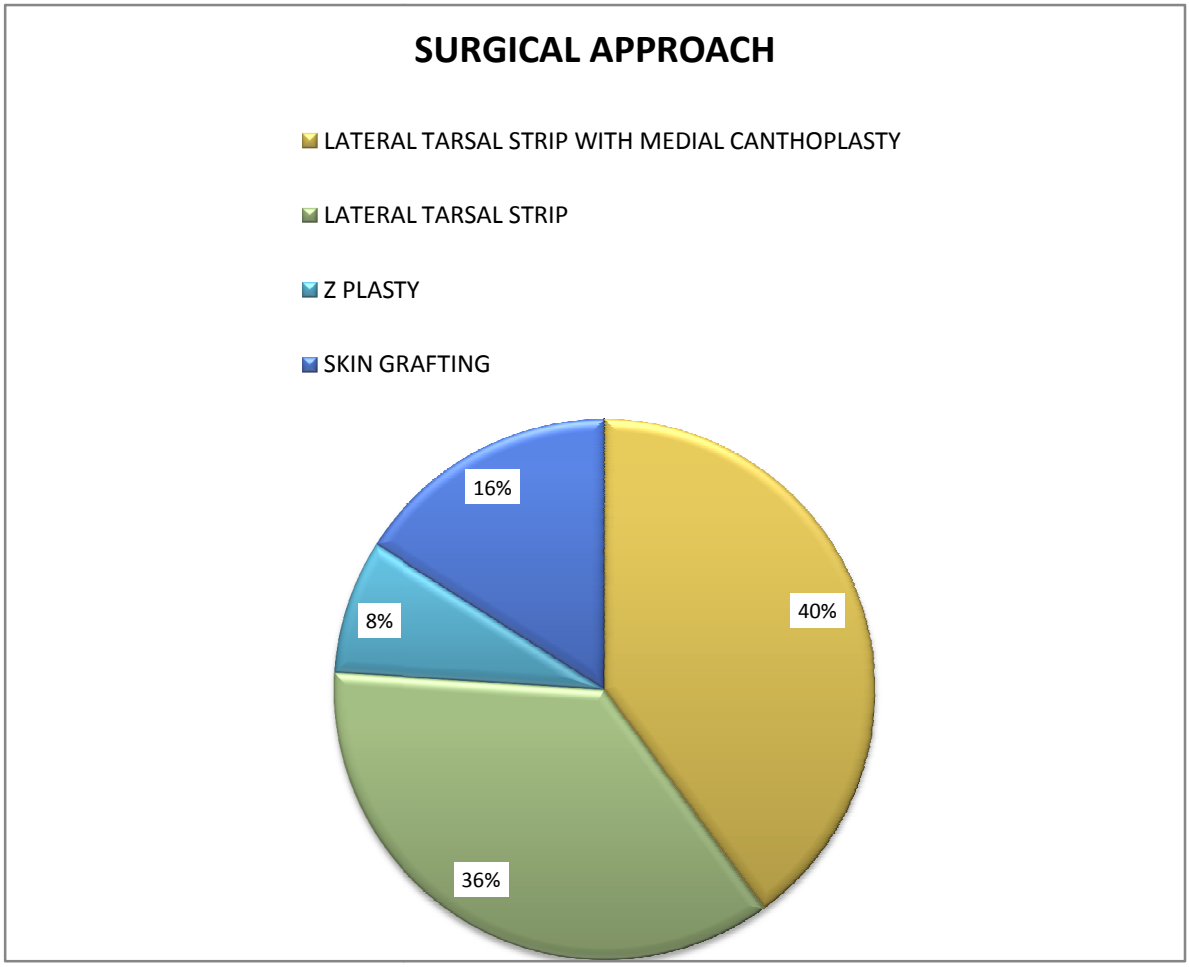
TYPES OF SURGICAL APPROACH IN THE STUDY PATIENTS IN VARIOUS TYPES OF ECTROPION.

SURGICAL MODALITY	NUMBER OF CASES	% OF TOTAL
Lateral tarsal strip with medial canthoplasty	10	40
Lateral tarsal strip	9	36
Z Plasty	2	8
Skin Grafting	4	16

In the above mentioned study the surgical approach was planned according to the underlying pathogenesis and type of ectropion for better surgical outcome.

Out of 25 patients,10 patients (40%) were subjected to Lateral tarsal strip with medial canthoplasty, 9 patients(36%) underwent lateral tarsal strip procedure. In 2 patients who presented with mild cicatricial ectropion Z plasty was done. And skin grafting was done in 4 patients with severe cicatricial ectropion. The following pie chart depicts the same.

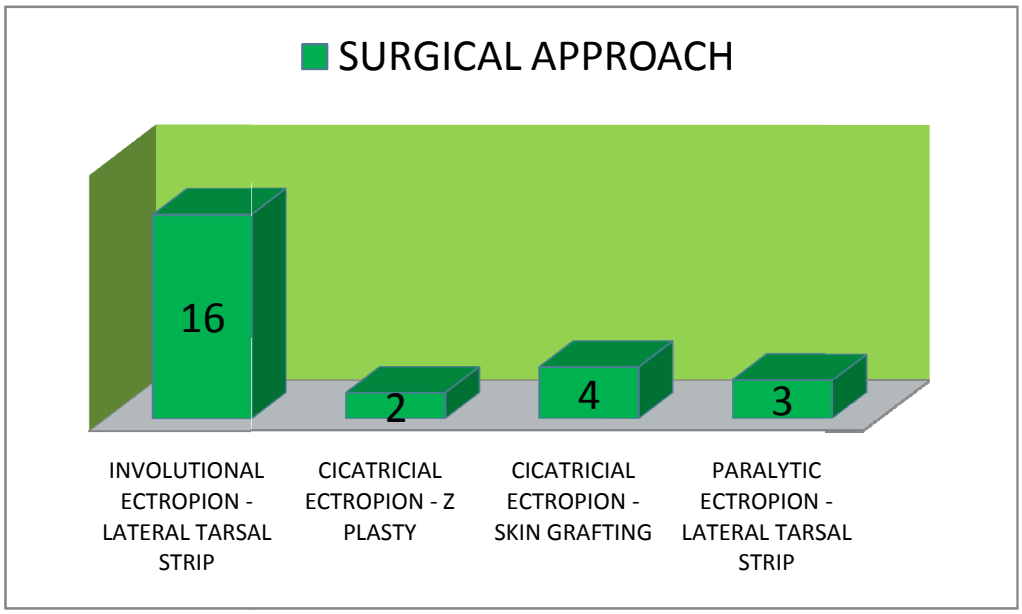
FOLLOWING PIE CHART SHOWS THE TYPES OF SURGICAL APPROACH IN THE STUDY PATIENTS IN VARIOUS TYPES OF ECTROPION.



SURGICAL MODALITY IN VARIOUS TYPES OF ECTROPION

TYPE OF ECTROPION	SURGICAL APPROACH	NUMBER OF CASES	% 0F TOTAL
Involutional ectropion	Lateral tarsal strip	16	64
Cicatricial ectropion Mild defect Generalised defect	 Z Plasty Skin grafting	 2 4	 8 16
Paralytic ectropion	Lateral tarsal strip	3	12

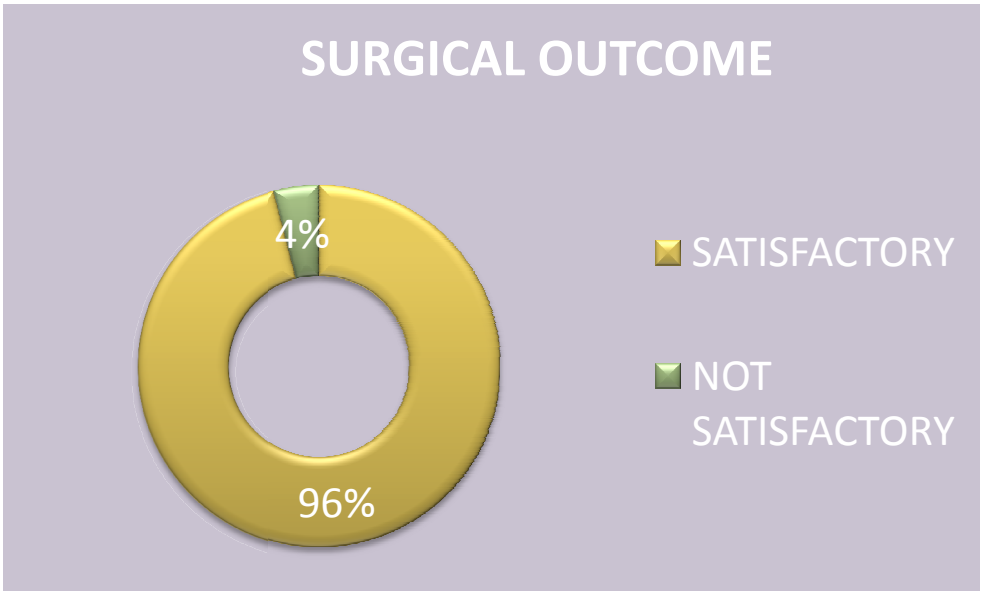
In my study lateral tarsal strip with or without medial canthoplasty was the procedure of choice carried out in 19 patients(76%) who presented with involutional and paralytic ectropion.In 2 patients(8%) who presented with mild cicatricial ectropion Z plasty was done. And skin grafting was done in 4 patients(16%) with severe cicatricial ectropion.



OUTCOME OF THE SURGERY IN STUDY PATIENTS

OUTCOME	NUMBER OF CASES	% OF TOTAL
SATISFACTORY	24	96
NOT SATISFACTORY	1	4

In my study out of 25 patients 24 (96%) patients had a satisfactory surgical outcome in the form of betterment of symptoms, preservation of anatomy (apposition of eyelid to the globe) and better cosmesis. In one patient(4%) who underwent skin grafting for severe cicatricial ectropion had persistent eversion of the lower eyelid due to insufficient graft uptake. The same is mentioned in the chart below.



EVALUATION OF PARAMETERS:

1. **RECOVERY FROM SYMPTOMS:**

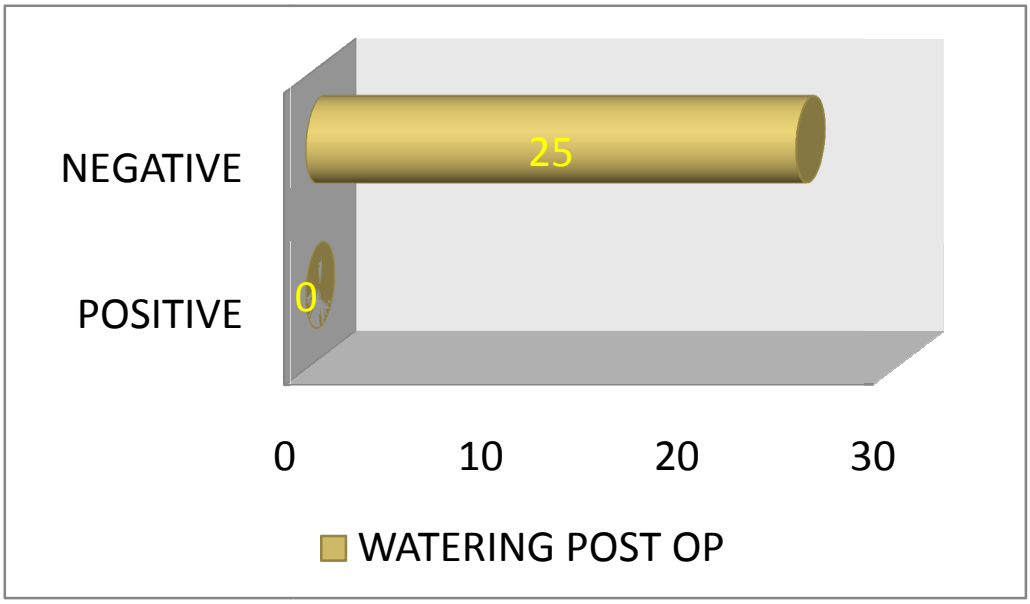
A) WATERING:

Positive – Watering

Negative – No watering

SYMPTOM	NUMBER OF CASES	% OF TOTAL
POSITIVE	0	0
NEGATIVE	25	100

In my study all 25 patients (100%) had no watering in the post operative period . The same is shown in the bar chart below.



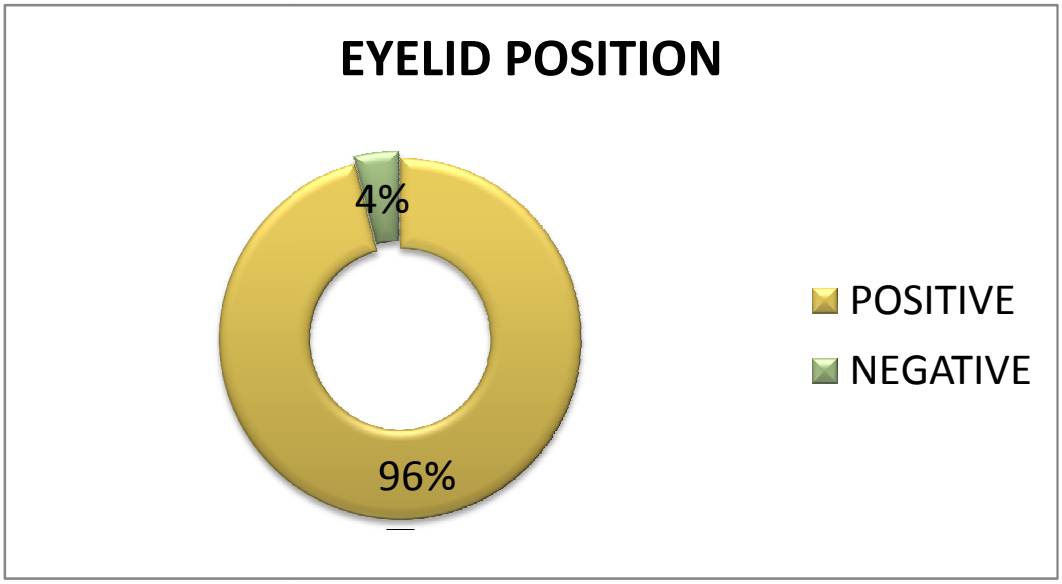
B) **EYELID POSITION:**

Positive – opposed to the globe

Negative – Everted

RESULTS	NUMBER OF CASES	% OF TOTAL
Positive	24	96
Negative	1	4

In my study mentioned above, postoperatively in 24(96%) out of 25 patients anatomy(apposition of lower eyelid to the globe) is regained. In one patient(4%) who underwent skin grafting for severe cicatricial ectropion had persistent eversion of the lower eyelid due to insufficient graft uptake postoperatively. The same is depicted in the chart below.



PRE –OP PICTURE

PATIENT WITH LEFT EYE LOWER LID

CICATRICIAL ECTROPION

POST –OP PICTURE

A

A) SKIN GRAFTING

B

B) DONOR SITE –

POST AURICULAR

INTEGRITY OF CANTHAL TENDON IN THE POST OPERATIVE PATIENTS IN THE STUDY GROUP.

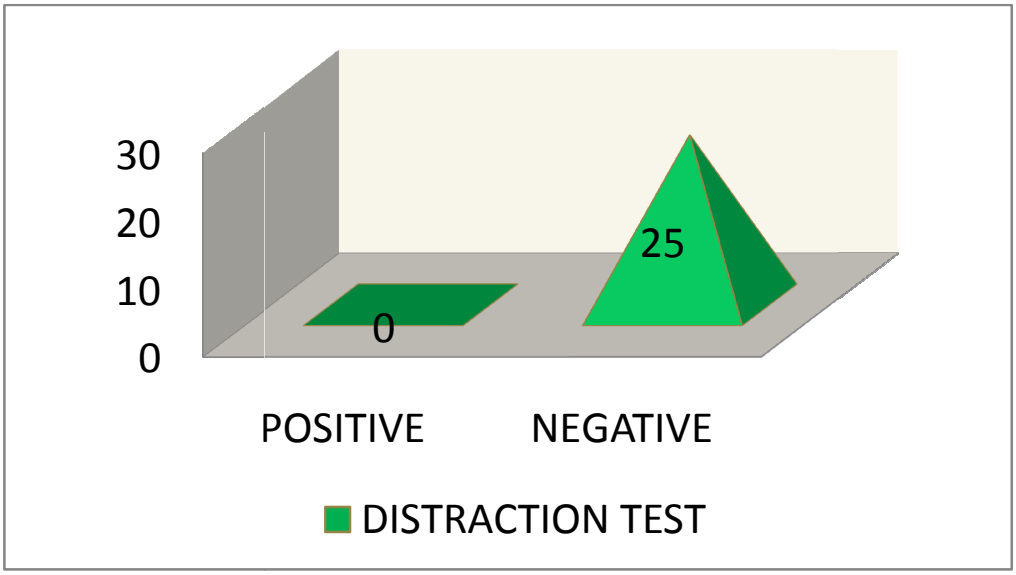
DISTRACTION TEST :

Positive (Beyond 2mm) – Persistent laxity of the canthal tendon.

Negative (Less than 2mm)- Integrity of canthal tendon regained.

DISTRACTION TEST	NUMBER OF CASES	% OF TOTAL
POSITIVE	0	-
Negative	25	100

In my study mentioned above,integrity of medial and lateral canthal tendon is good in the post operative period in all 25 patients(100%).The same is mentioned in the chart below.



ASSESSMENT OF HORIZONTAL LID LAXITY IN POST OPERATIVE PATIENT IN THE STUDY GROUP.

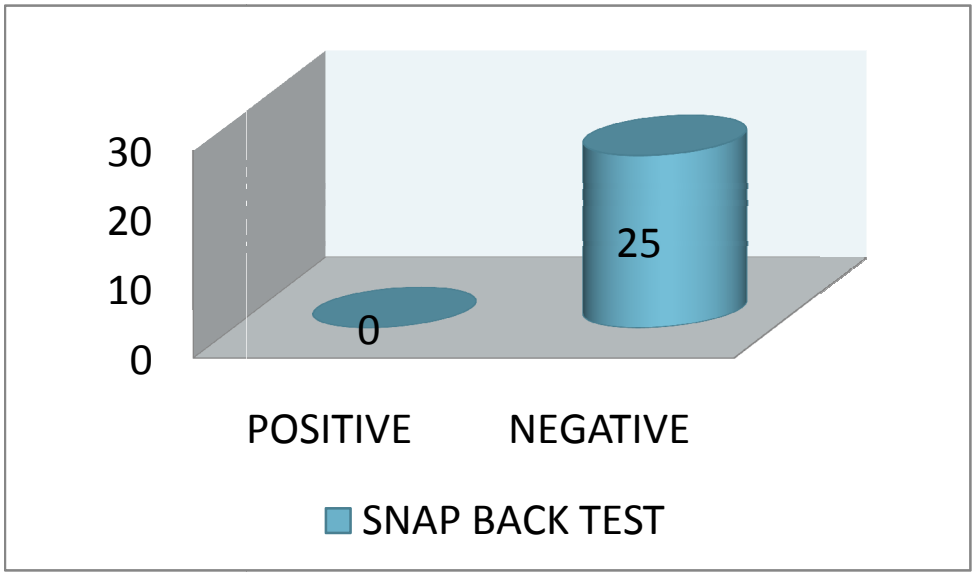
SNAP BACK TEST:

Positive (lid can be pulled beyond 6mm) – Persistence of horizontal lid laxity.

Negative – Horizontal lid laxity corrected postoperatively

SNAP BACK TEST	NO. OF CASES	% OF TOTAL
Positive	0	-
Negative	25	100

In my study as mentioned above , the integrity of the horizontal lid is good in the post operative period in all 25 patients(100%) in the study group. The following chart depicts the same.



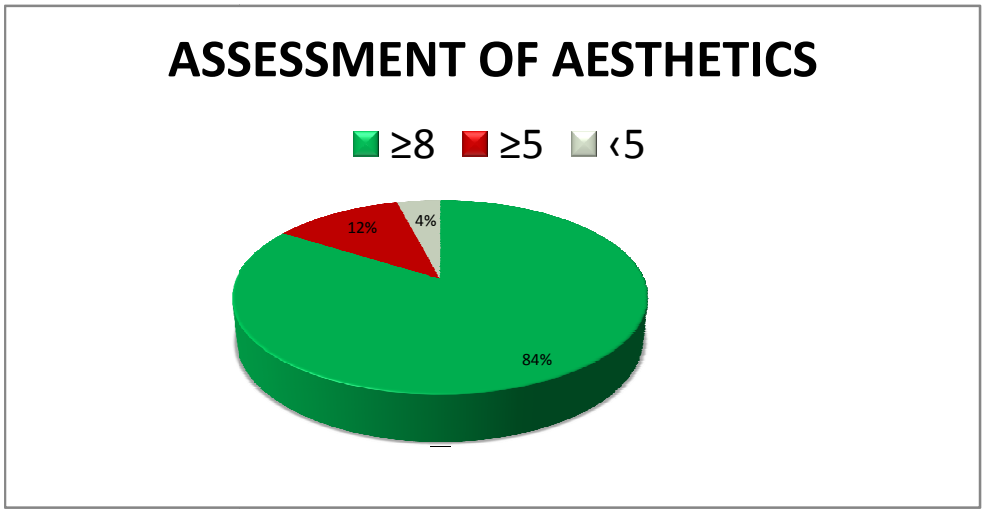
ASSESSMENT OF AESTHETICS:

It is evaluated by means of visual analogue scale .

In visual analogue scale ,patient is asked to grade the scale from 1 to 10 before and after the surgery.

SCORE	NO OF CASES	% OF CASES
≥/=8	21	84
≥/=5	3	12
‹ 5	1	4

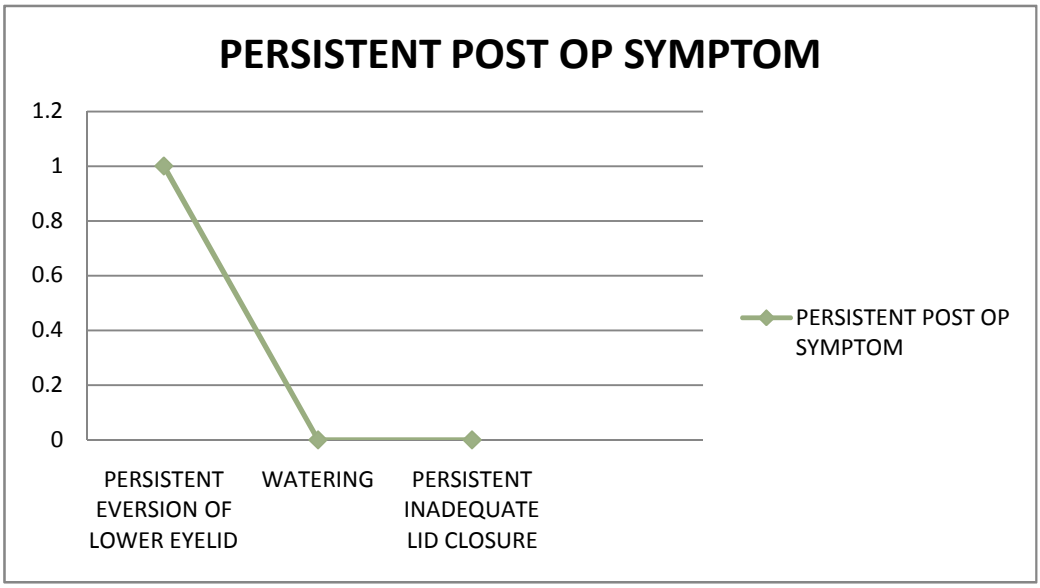
The following pie chart depicts the same



PERSISTENCE OF POST OPERATIVE SYMPTOMS

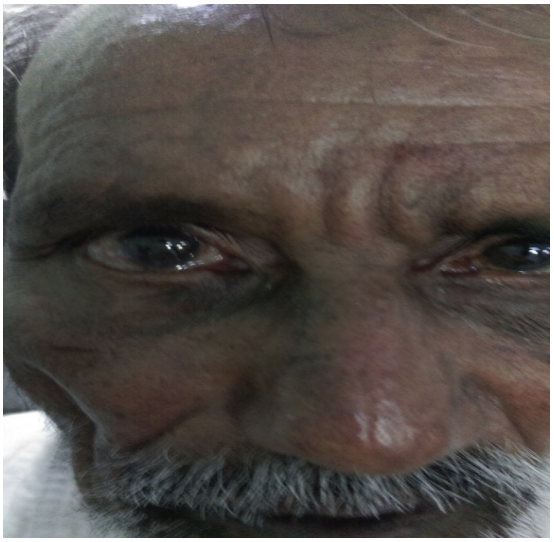
PERSISTENT POST-OP SYMPTOM	NO OF CASES	% OF TOTAL
Persistent eversion of the lower lid	1	4
Watering	NIL	0
Persistent inadequate lid closure	NIL	0

In my study mentioned above,eversion of the lower eyelid is persistent in one(4%) patient who underwent skin grafting for severe cicatricial ectropion.Remaining 24 patients(96%) eversion of the lower eye lid is regained.No post operative complications like watering or inadequate lid closure is noted in any of the 25 patients.The same is depicted in the chart below.

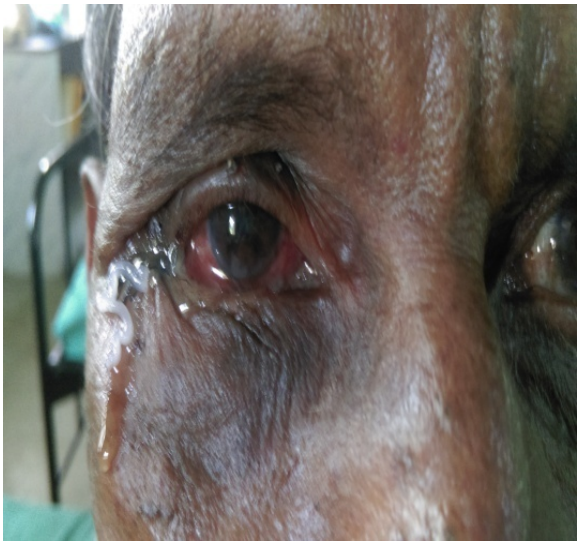


PATIENT WITH RIGHT EYE LOWER LID INVOLUTIONAL ECTROPION

PRE OP PICTURE



POST OP PICTURE

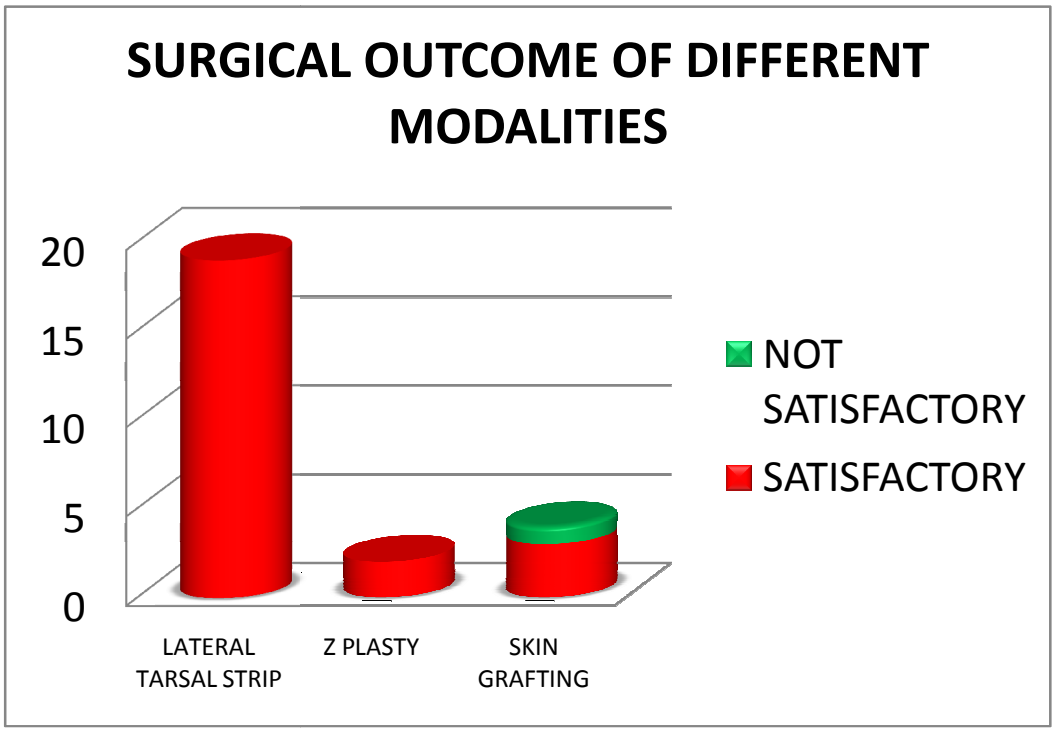


OUTCOME FOLLOWING DIFFERENT SURGICAL MODALITIES OF ECTROPION

SURGICAL PROCEDURE	NO. OF CASES	RESULTS	
		NUMBER OF CASES	
		SATISFACTORY	UNSATISFACTORY
Lateral tarsal strip	19	19	NIL
Z Plasty	2	2	NIL
Skin grafting	4	3	1

In my study mentioned above, out of 25 patients,all 19 (76%) patients who underwent lateral tarsal strip with or without medial canthoplasty procedure and 2 patients(8%) who underwent Z Plasty had a satisfactory surgical outcome in the form of betterment of symptoms, preservation of anatomy (apposition of eyelid to the globe) and better cosmesis. In one patient(4%) among 4 patients(16%)who underwent skin grafting for severe cicatricial ectropion had persistent eversion of the lower eyelid due to insufficient graft uptake. The same is mentioned in the chart below.

THE FOLLOWING CHART SHOWING THE OUTCOME OF DIFFERENT SURGICAL PROCEDURES IN THE MANAGEMENT OF DIFFERENT TYPES OF ECTROPION.



COMPLICATIONS:

Persistent eversion of the lower eyelid was noticed postoperatively in one patient who underwent skin grafting for cicatricial ectropion due to insufficient graft uptake.

Patient is advised to come for follow up to plan for repeat procedure.

DISCUSSION

In various studies conducted on the surgical management of ectropion has proven that lateral tarsal strip and canthoplasty is the standard surgical procedure for the management of involutional and paraytic ectropion.

JOURNALS :

1. British journal of ophthalmology,1984 v0l.68,pg:639 – study on management of 10 cases of paralytic ectropion.
2. Archives ophthalmology – vol.97 ,pg:2192-96 conducted in 51 patients of paralytic ectropion with lid laxity.

RESULTS OF THIS STUDY:

1. All patients who underwent canthoplasty procedure had around 90% improvement in the symptom of epiphora .
2. Lateral tarsal strip procedure gives the normal appearance of the eyelid and good results in all the 51 patients.

In our study both lateral tarsal strip and medial canthoplasty used in involutional and paralytic ectropion to achieve the following results:

1. To achieve normal anatomical apposition of the eyelid to the globe.
2. To achieve apposition of the lax lateral canthus to the globe
3. To give protection to the cornea in the lateral aspect of the eyelid

SUMMARY:

1. The most common age group of presentation was 5th – 7th decade of life. The mean age was 65.28±5.70
2. There was a male preponderance.
3. Ectropion mainly affects the lower eyelid.
4. The most common type of ectropion is involutional ectropion .
5. The most common etiology for ectropion was senility.
6. The most common symptoms were eversion of the eyelid,watering followed by inadequate lid closure.
7. Detailed clinical evaluation by snap back test,distraction test ,test to detect to detect vertical deficiency of the skin and careful slit lamp examination to detect exposure keratitis is crucial for diagnosis and to plan for appropriate surgical management to yield good post operative results.
8. Lateral tarsal strip procedure with or without medial canthoplasty depending on the integrity of medial canthal tendon is the ideal procedure of choice with a successful anatomical and aesthetic post operative outcome in all patients with involutional and paralytic ectropion.

9. In patients with cicatricial ectropion with mild defect Z- Plasty had a satisfactory surgical outcome.
10. Patients with cicatricial ectropion with generalized defect,Skin grafting gave a good results although 1 patient had a unsatisfactory results with persistent eversion due to insufficient graft uptake.
11. Thus selecting proper surgical management which addresses both the underlying pathogenesis and type of ectropion is crucial for better surgical outcome.

CONCLUSION:

`Lateral tarsal strip procedure and medial canthoplasty procedure gives the successful surgical outcome in the form of alleviation of symptoms like watering,restoration of eyelid anatomy,corneal protection in the lateral aspect of the eye and better cosmesis in the management of involutional and paralytic ectropion.

Both these procedures are simple with a short learning curve.

Z Plasty and skin grafting is the procedure of choice in the management of cicatricial ectropion with local and generalized defect respectively.

Thus planning appropriate surgical approach according to the type and pathogenesis of ectropion is the key for successful surgical outcome.

PART III

PART – 3

PROFORMA:

NAME :

AGE/SEX :

I.P NO :

CHIEF COMPLAINTS:

PREVIOUS MEDICAL HISTORY :

PRIOR TREATMENT TAKEN : History of any surgery.

PERSONAL HISTORY :

VISUAL ACUITY AT THE TIME OF EXAMINATION :

RE:

LE :

OCULAR EXAMINATION:

	RE	**LE**
FACIAL SYMMETRY		
ABILITY TO RAISE EYEBROW		
ORBICULARIS MUSCLE TONE :		
LAGOPHTHALMOS :		
BELLS PHENOMENON		
FACIAL SCAR		
VERTICAL DEFICIENCY OF SKIN		
EYELASHES:		

EYELIDS :

POSITION

PUNCTUM POSITION :

TEST FOR LOWER LID LAXITY :

PINCH/DISTRACTION TEST :

SNAP BACK TEST :

TEST FOR RETRACTOR WEAKNESS :

High resting position of lower lid

Inferior fornix deepening

Excursion of lower lid in down gaze

Visiblity of white band in inferior fornix

TEST FOR LATERAL CANTHAL TENDON LAXITY :

Rounding of lateral canthal angle

Horizontal shortening of palpabrel fissure

Direct palpation of inferior crus of lateral

canthal tendon with simultaneous medial traction

Distance between temporal limbus to lateral canthal angle

TEST FOR MEDIAL CANTHAL TENDON LAXITY :

Rounding of medial canthal angle

Amount of puncum displacement on lateral traction

Direct palpation of medial canthal tendon

with simulataneous lateral traction

EXTRAOCULAR MOVEMENTS :

CONJUNCTIVA :

CORNEA :

ANTERIOR CHAMBER :

IRIS:

PUPIL:

LENS :

FUNDUS:

BLOOD PRESSURE:

DIAGNOSIS:

INVESTIGATIONS :

CONJUNCTIVAL SMEAR :

CORNEAL SMEAR

HEMOGLOBIN

BLEEDING TIME

CLOTTING TIME

RANDOM BLOOD SUGAR

SURGICAL MODALITY

FOLLOW UP:

Every patient was asked for regular follow up after 1wk, 3wks & after three months.At each visit surgical wound site,position of lower eyelid,integrity of lower lid retractor, any inversion of eyelid and canthaltendon laxity were assessed.

MASTER CHART

S.NO	NAME	AGE	SEX	I.P NO.	TYPE OF ECTROPION	PRESENTING SYMPTOMS			SURGICAL APPROACH	OUTCOME OF SURGERY		MCL		LCL		RESULTS
						E	W	ILC		IMPROVEMENT OF SYMP (WATERING)	REGAINED ANATOMY (OPPOSITION OF LID TO GLOBE)	PRE OP	POST OP	PRE OP	POST OP	
1	SOKKALINGAM	67	M	51282	RE LL INV.ECT	+	+	-	RE LL LATERAL TARSAL STRIP	+	+	-	-	+	-	S
2	NETHAJI	30	M	23720	LE LL CIC. ECT	+	+	-	LE LL SCAR EXCISION WITH SKIN GRAFTING	+	+	-	-	-	-	S
3	ARIF MOHAMED	68	M	13827	RE LL INV.ECT	+	+	-	RE LL LAT.TAR.STRIP WITH M.C	+	+	+	-	+	-	S
4	VALLI	50	F	34410	LE LL INV. ECT	+	-	-	LE LL LAT.TAR.STRIP WITH M.C	+	+	+	-	+	-	S
5	VENKATESAN	34	M	29667	LE LL CIC. ECT	+	-	-	LE LL SCAR EXCISION WITH SKIN GRAFTING	+	+	-	-	-	-	S
6	BEER MOHAMED	69	M	50118	RE LL INV.ECT WITH PU.E	+	+	-	RE LL LAT.TAR.STRIP WITH M.C	+	+	+	-	+	-	S

7	RAMALINGAM	74	M	23549	RE P.E	-	+	+	RE LL LAT.TAR.STRIP WITH M.C	+	+	+	-	+	-	S
8	MOHAN	50	M	34841	LE LL P.E	-	+	+	LE LL LAT.TAR.STRIP WITH M.C	+	+	+	-	+	-	S
9	KRISHNA MOORTHY	75	M	51821	RE LL INV ECT	+	-	-	RE LL LAT.TAR.STRIP	+	+	-	-	+	-	S
10	SUBRAMANI	60	M	20162	LE LL CIC ECT	+	-	-	LE LL SCAR EXCISION WITH SKIN GRAFTING	+	-	-	-	-	-	NS
11	RUTHRA MOORTHY	64	M	50611	LE LL INV ECT	+	-	-	LE LL LAT.TAR.STRIP	+	+	-	-	+	-	S
12	RANGANATHAN	60	M	50615	LL LE INV ECT	+	-	-	LE LL LAT.TAR.STRIP	+	+	-	-	+	-	S
13	ELUMALAI	63	M	63161	RE LL P.E	-	+	+	RE LL LAT.TAR.STRIP WITH M.C	+	+	+	-	+	-	S
14	CHINNAPONNU	70	F	32691	LE LL INV ECT	+	-	-	LE LL LAT.TAR.STRIP	+	+	-	-	+	-	S
15	GAUTHAM	24	M	16671	RE LL MILD CIC . ECT	+	-	-	RE LOWER LID Z PLASTY	+	+	-	-	-	-	S
16	SUBBAMMAL	75	F	20172	LE LL INV ECT	+	-	-	LE LL LAT.TAR.STRIP	+	+	-	-	+	-	S

17	SHEIK ABDHULLAH	60	M	63182	RE LL INV ECT	+	-	-	RE LL LAT.TAR.STRIP WITH M.C	+	+	+	-	+	-	S
18	NAGAIAH	63	M	23578	RE LL INV ECT	+	+	-	RE LL LAT.TAR.STRIP WITH M.C	+	+	+	-	+	-	S
19	RAMESH	35	M	34856	LE UL MILD CIC ECT	+	-	-	LE UL Z PLASTY	+	+	-	-	-	-	S
20	MAHENDRAN	69	M	51250	RE LL INV ECT	+	+	-	RE LL LAT.TAR.STRIP WITH M.C	+	+	+	-	+	-	S
21	NATARAJAN	67	M	23745	LE LL INV ECT	+	-	-	LE LL LAT.TAR.STRIP	+	+	-	-	+	-	S
22	KASIMUTHU	76	M	13811	LE LL CIC ECT	+	-	-	LE LL SCAR EXCISION WITH SKIN GRAFT	+	+	-	-	-	-	S
23	VEL MURUGAN	66	M	20082	RE LL INV ECT	+	+	-	RE LL LAT.TAR.STRIP	+	+	-	-	+	-	S
24	SATHYA MOORTHY	68	M	16642	LE LL INV ECT	+	+	-	LE LL LAT.TAR.STRIP	+	+	-	-	+	-	S
25	VEERAYYA	73	M	16689	RE LL INV ECT	+	+	-	RE LL LAT.TAR.STRIP WITH M.C	+	+	+	-	+	-	S

KEY TO MASTER CHART:

ABBREVIATIONS	KEY
ECT	ECTROPION
INV	INVOLUTIONAL
CIC	CICATRICIAL
P.E	PARALYTIC ECTROPION
LL	LOWER EYELID
UL	UPPER EYELID
E	EVERSION OF THE EYELID
W	WATERING
ILC	INADEQUATE LID CLOSURE
PU.E	PUNCTAL EVERSION
MCL	MEDIAL CANTHAL TENDON
LCL	LATERAL CANTHAL TENDON
LAT.TAR.STRIP	LATERAL TARSAL STRIP
M.C	MEDIAL CANTHOPLASTY
S	SATISFACTORY
NS	NON SATISFACTORY

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